

Vol. VIII

FEBRUARY, 1922

No. 2

The
International Journal
of
Orthodontia,
Oral Surgery and Radiography

*A Monthly Journal Devoted to the Advancement
of the Sciences of Orthodontia, Oral Surgery,
and Dental and Oral Radiography*

Martin Dewey, D.D.S., M.D., New York

Editor

PROPERTY OF
DENTAL LIBRARY
UNIVERSITY OF MICHIGAN
DON'T MUTILATE OR
REMOVE

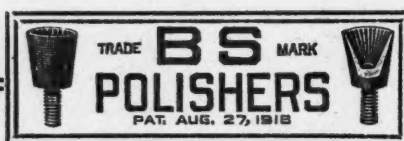
PUBLISHED BY

THE C. V. MOSBY COMPANY

SAINT LOUIS

\$6.00 Per Annum

Single Copies, 75 Cents



BS Polishers were perfected after years of effort to give the dental profession something different in the way of polishers.

BS Polishers clean the necks and roots of the teeth without cutting or tearing the gums.

BS Polishers are the most universal dental

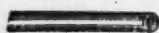
polishers ever made. They clean small and large teeth equally well.

BS Polishers will spread out more on the surfaces of the teeth than any other rotating polishers; cling closer to their contours; extend farther under the gingivae, causing no pain or irritation.

You can use your favorite polishing materials. If made into a paste and put inside the cup they will always be right where you want them.

Reliable dealers sell them, at 60c a dozen, \$6.70 per Gross

For No. 7
Handpiece
Price 5c each

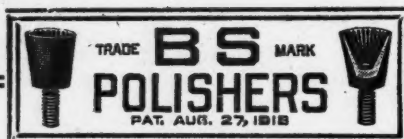


Young's Mandrels are made for these polishers and are not intended for other uses. R. A. Mandrels are made short as possible, which enables the operator to reach buccal surfaces of molars.



For No. 2
R. A. with
protecting
cap, 15c each

YOUNG DENTAL MFG. CO. St. Louis, Mo.



Novocain-Suprarenin Solutions

"READY TO INJECT"

WE offer our *N. S. solutions* "E" and "T" in ampules. The preference is given to ampules by the careful practitioner *because—*

1. The sterilized *N. S. solution* in the ampule *continues sterile.*
2. The *N. S. solution* in ampules is a most convenient form for injection purposes.
3. Scientific exactitude is employed in the composition of the contents of the *N. S. solution* in ampules.
4. *N. S. solution* in ampules is isotonic.

"E" SOLUTIONS IN AMPULES, each containing 3cc., in boxes of 10 ampules, and 1cc. in boxes of 20 ampules.

"T" SOLUTION IN AMPULES, (with two-fifths the Suprarenin content of the "E"), each containing 3cc., in boxes of 10 ampules, and 1cc. in boxes of 20 ampules.

THE PRICE TO THE DENTAL PROFESSION IS 75c PER BOX

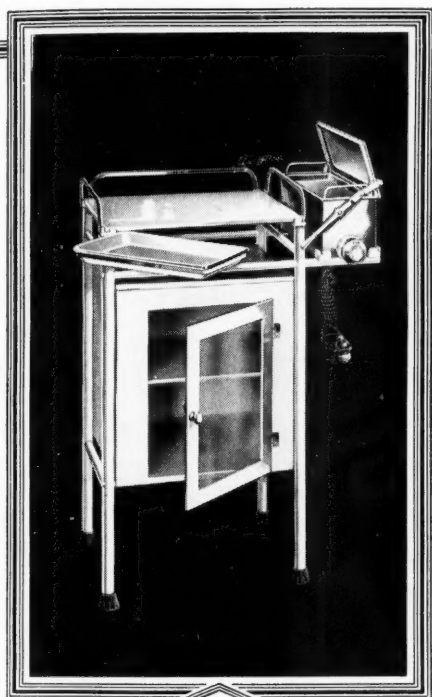
Ask your dental dealer for "The Original" NOVOCAIN



Trade Mark
Reg. U.S. Pat. Off.

Made only by

HAMETZ LABORATORIES, Inc.
One-Twenty-Two Hudson Street, New York.



CASTLE

A New Sterilizer

HERE is a new combination Sterilizer and table that deserves a place in every business-like dental office. It is equipped with the standard Castle Electric Sterilizer in the 13 inch size, so placed as to permit the handling of instruments from either the front or side.

The tray swinging on a bracket may be closed under the table top when not in use. The cabinet is large and will hold a goodly supply of linens or other material.

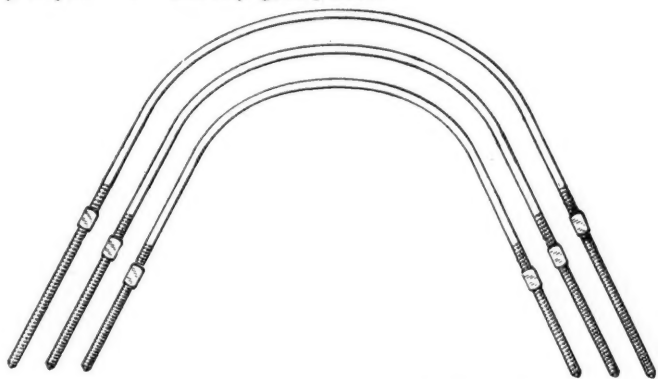
Place your order early.

WILMOT CASTLE CO.
1150 University Avenue
ROCHESTER, N. Y., U. S. A.

CASTLE

DR. BRADY'S EXPANSION ARCHES

Are made from a highly elastic alloy, deliver their power gently and work a long time; little soreness; fewer visits needed. Nuts adjusted accurately—they stay right where you put 'em. Heavily gold-plated.



Two Gauges:

16 Gauge
18 Gauge

Three Lengths:

Large, 5 inch
Medium, 4½ inch
Small, 4 inch

Three Patterns:

Regular, (plain)
With Hooks,
Full threaded

PRICES:

Regular Pattern, either gauge, any length, each.....\$1.00
With retraction hooks, either gauge, any length, each..... 1.50
Threaded entire length, either gauge, any length, each..... 2.00

WE ALSO MAKE CONTOURED CLAMP BANDS, THAT FIT

ANY DEALER CAN GET THESE FOR YOU

BRADY MAN'F'G CO., 3103 Troost Ave., Kansas City, Mo.

Mention this Journal when writing to Advertisers.

International Journal of Orthodontia, Oral Surgery and Radiography

A Monthly Journal Devoted to the Science of Orthodontia, Including
Surgical Orthodontia, Oral Surgery, and Dental and Oral Radiography

REPRESENTING

American Society of Orthodontists.	Alumni Society of the International School of Orthodontia.
Pacific Coast Society of Orthodontists.	European Society of Orthodontia.
Southwestern Society of Orthodontists.	British Society for the Study of Orthodontics.
Southern Society of Orthodontists.	Société Française d'Orthopédie Dento-Faciale.
Rocky Mountain Society of Orthodontists.	
Alumni Society of the Dewey School of Orthodontia.	

American Society of Dental Radiographers

EDITORIAL STAFF—Orthodontia

MARTIN DEWEY, M.D., D.D.S., New York, *Editor*
H. C. Pollock, D.D.S., St. Louis, *Associate Editor*

Oral Surgery

M. N. Federspiel, D.D.S., M.D., Milwaukee.	Jos. D. Eby, D.D.S., New York.
Vilray P. Blair, M.D., F.A.C.S., St. Louis.	Leroy M. S. Miner, D. M. D., M.D., Boston.
William Carr, M.D., D.D.S., New York.	Wm. L. Shearer, M.D., D.D.S., Omaha, Nebr.
Frederick F. Molt, D.D.S., Chicago.	Robert H. Ivy, M.D., D.D.S., Philadelphia.

Dental and Oral Radiography

Clarence O. Simpson, M.D., D.D.S., St. Louis. Howard R. Raper, D.D.S., Indianapolis.

All business communications should be addressed to the Publishers: C. V. Mosby Co., St. Louis.
(See page 114 for further information.)

CONTENTS FOR FEBRUARY, 1922

Original Articles

Stimulating Arch Development by the Exercise of the Masseter-temporal Group of Muscles. By Alfred Paul Rogers, D.D.S., Boston, Mass.....	61
Relation of Malocclusion and Orthodontics to General Health. By C. W. Bruner, D.D.S., Waterloo, Iowa.....	65
The Best Age for Treatment in Relationship to Retention. By George Northcroft, L.D.S.	74
Report of Cases Shown by Moving Picture Film. By Dr. Adelbert Fernald, Boston, Mass.	90
Case Report. By J. A. Burrill, D.D.S., Chicago, Ill.	91
A Soldering Stand. By Earnest N. Bach, D.D.S., Toledo, Ohio.	96
Appliances. By J. E. Taylor, D.D.S., Hollywood, Calif.	98

Department of Dental and Oral Radiography

Speedy Technic of Roentgenographing the Teeth. By C. A. Le Master, D.D.S., St. Louis, Mo.	100
Dental Film Holder. By F. B. Sheldon, Fresno, Calif.	103

Radiodontic Riddles

A Non-Surgical Removal	104
A Three-Inch Capacity Unsatisfactory	105
The Trials of the Younger Brother	106

Abstract of Current Literature

Orthodontia, Oral Surgery, Surgical Orthodontia, and Dental Radiography	107
---	-----

Editorials

The American Society of Dental Radiographers	114
The International Journal of Orthodontia, Oral Surgery and Radiography	115

Orthodontic News and Notes

Orthodontic News and Notes	116
----------------------------------	-----

Mention this Journal when writing to Advertisers.

The International Journal of Orthodontia, Oral Surgery and Radiography

(All rights strictly reserved)

VOL. VIII

ST. LOUIS, FEBRUARY, 1922

No. 2

ORIGINAL ARTICLES

STIMULATING ARCH DEVELOPMENT BY THE EXERCISE OF THE MASSETER-TEMPORAL GROUP OF MUSCLES*

BY ALFRED PAUL ROGERS, D.D.S., A.M., BOSTON, MASS.

Assistant Professor of Orthodontic Research, Harvard University Dental School

I SHOULD like to show you a few cases that have been treated by stimulating the muscles of mastication; and possibly by so doing encourage you to take a little further interest in this phase of orthodontia. With me this method of practice is increasing steadily, and with results that justify its continued study and application.

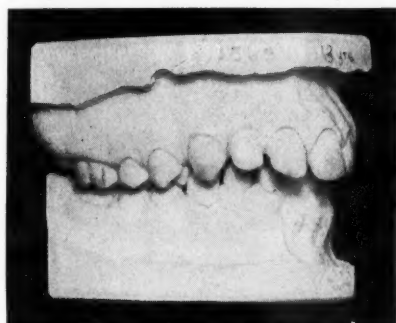


Fig. 1.

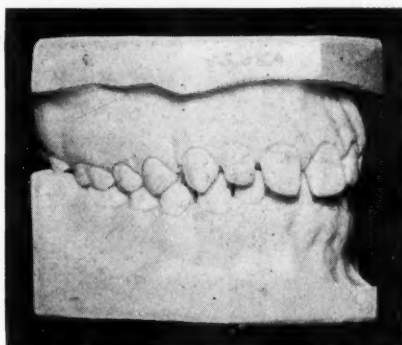


Fig. 2.

Fig. 1 is a case in which the *preliminary treatment* has been accomplished without apparatus. It will be seen by the study of this picture that the case is one of distocclusion which under the ordinary method of treatment would call for appliances on both arches with intermaxillary elastics. The muscular development of this child's face was particularly deficient. The masseter-temporal muscles were so poorly developed that the child had little conscious con-

*Read before the American Society of Orthodontists, Atlantic City, N. J., April 26-30, 1921.

trol over their action. She was taught first to place her arches in a position of mechanical advantage and while in this position she was encouraged to make conscious and persistent effort to contract and relax this group. These muscles gradually grew in strength, and it was not many months before I found that the child was able to masticate with her arches in the correct mesio-distal relation. Of course, the condition of the anterior teeth will have to be corrected by apparatus, but the retention can be greatly facilitated by strengthening the orbicularis oris muscle. Fig. 2 will show you this same case after six to eight months of exercise. Figs. 3 and 4 give you a very adequate



Fig. 3.



Fig. 4.

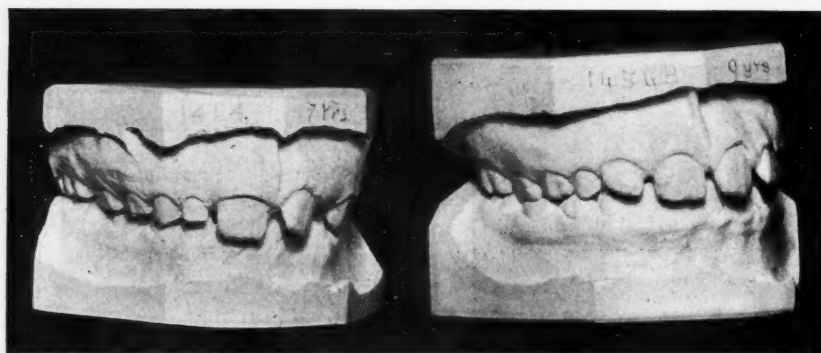


Fig. 5.

idea of the muscular improvement. You will see at once that the face is much better developed, a digital examination would show you a very satisfactory muscular tonicity as compared with the original.

There must be many cases in the practice of each of us that can be improved to a certain point without appliances. I am going to illustrate two more in which the only appliance used was the lower lingual wire with a supplementary treatment consisting of increased muscular activity.

Fig. 5 shows you a child seven years of age. The treatment consisted of

TABLE I

MAXILLARY	BEFORE TREATMENT	AFTER TREATMENT	GROWTH
First permanent molar	33 mm.	35 mm.	2 mm.
Second deciduous molar	30 mm.	34 mm.	4 mm.
First deciduous molar	27 mm.	33 mm.	6 mm.
Deciduous canine	26 mm.	29 mm.	3 mm.
Molar to central	36 mm.	39½ mm.	3½ mm.



Fig. 6.

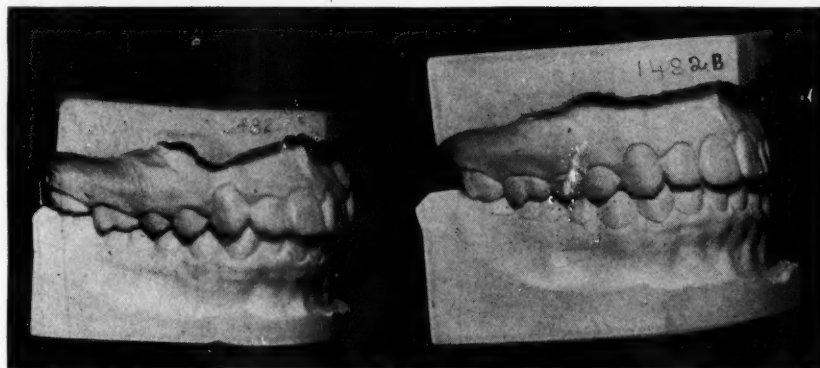


Fig. 7.



Fig. 8.

a very gradual expansion of the lower arch accompanied by vigorous and systematic exercise of the masseter-temporal muscles with the teeth held firmly in occlusion. A view of the occlusal aspect (Fig. 6) of the maxillary arch will be of interest to you, I am sure. Table I will give you an idea of the increased dimensions, that of the maxillary arch being of particular interest.

Fig. 7 is that of an older child, one of twelve years of age who received similar treatment, and also very satisfactory results. In reading the table of the development of the maxillary arch (Fig. 8) note the fact that under muscular

activity we had a narrowing of the canine region and a flattening in the incisor region, thus completing a very satisfactory arch form.

TABLE II

MAXILLARY	BEFORE TREATMENT	AFTER TREATMENT	GROWTH
First permanent molar	34 mm.	38½ mm.	4½ mm.
Second premolar	31 mm.	35½ mm.	4½ mm.
First premolar	26½ mm.	30 mm.	3½ mm.
Canine	28 mm.	27 mm.	-1 mm.
Molar to central	38 mm.	39 mm.	1 mm.

I have no doubt that there are, in the practice of many, similar cases to these, which the intelligent application of muscular work will help to develop.

I should like to say before closing that from reading discussions in various magazines in which this work has been referred to I have been disappointed to find occasionally a lack of understanding of the fundamental principles. Some have asserted that this work is useful in retention only. With me I find that in the treatment of the majority of my cases this method can be used to advantage.

RELATION OF MALOCCLUSION AND ORTHODONTICS TO GENERAL HEALTH*

BY C. W. BRUNER, D.D.S., WATERLOO, IOWA

"IN THE whole realm of hygiene there is no one thing so important as the hygiene of the mouth." Since this utterance by Dr. Osler some ten or twelve years ago, the medical and dental professions have had abundant proof of the statement.

Mouth hygiene is dependent in a large measure upon the normal development and efficient functioning of the teeth and their associated parts. The greatest degree of efficiency in the functioning of the teeth and their associated organs is attained in a well balanced normal development of all the bones and soft tissues of the face and mouth, thereby establishing a normal occlusion of the teeth.

Reasoning from these premises it may be understood that any deviation from the normal in the development of the teeth and their associated organs which results in a malocclusion of the teeth may become a barrier or a menace to the general health.

Normal occlusion is defined by Dewey in "Practical Orthodontia" as, "the relation of the inclined planes of the teeth, as intended by nature." "Malocclusion is a deviation from the normal to such an extent as to interfere with the functions of the teeth."

Orthodontia being that science which deals with the malocclusion of the teeth, the correlation of orthodontia to general health should at once become patent to all practitioners of dentistry, and especially, should the orthodontist consider his field so broad as to include the consideration of the general health, in the diagnosis, treatment and prognosis of the cases coming under his care.

That the all too common thought of "straightening teeth," for esthetic reasons only, possesses the mind of the laity, and we fear, the general practitioner of dentistry also, is regrettable. However much the physiognomy of the human face may be beautified by orthodontic procedure, in any case of malocclusion it should be remembered that the normal development of the mandible and maxillary bones and the establishment of a normal occlusion of the teeth is fundamentally essential also to the development of a strong healthy body.

In his text on Practical Orthodontia, Dewey describes the forces of occlusion in the order that they make their appearances during the time the dental apparatus is developing, as follows: Normal cell metabolism, muscular pressure, force of inclined planes, normal proximal contact, harmony in size of the dental arches, and atmospheric pressure. Since the functioning of all the organs of the body is essential to health, and each individual organ functions normally

*Read before the Alumni Society of the International School of Orthodontia, Kansas City, Mo., July 14, 1921.

only as the cells of that organ develop in a normal physiologic manner, it then follows that normal cell metabolism becomes the important factor not only in the forces of occlusion, but in the development of the entire body; thereby establishing a most definite relation between the occlusion of the teeth and general health.

While recognizing the effect upon the occlusion of the teeth, of general ill-health during the early life of the child, when the teeth, the mandible, the maxillary, and other bones and tissues of the head and face are in the formative state, we shall, in this discussion confine our remarks more particularly to the effect of malocclusion upon the health, as evidenced through the aid of models, and x-rays in the clinical experience of the writer in his private practice.

In the general practice of dentistry we are in these latter days frequently called upon to diagnose, or to assist in the diagnosis of general systemic complications through an oral examination. The advent of the x-ray in the making of such examinations has proved a boon to the professions of medicine and dentistry and to humanity.

Often the x-ray reveals conditions of unerupted, retarded and impacted



Fig. 1.—Case I. Radiogram. Note the low maxillary sinus and the broken continuity of the floor of same about the root of the first premolar.



Fig. II.—Case II. Radiogram, showing impacted second premolar, and root absorption of the left central incisor, right central, lateral, canine and the first premolar teeth, together with the necrosed area extending well up into the palatal bone.

teeth, which under the accepted definition of occlusion, constitute malocclusion of these teeth; which malocclusion is, or may become a serious menace to the health and life of the possessor. And yet, how little does the average general practitioner of dentistry think of the possible handicap to his patient, of such an unerupted, or impacted canine, premolar or third molar tooth.

A few models and x-rays with the case histories are illustrative of our thought along this line.

CASE I.—A young lady of twenty-three years, suffered three years of neuritis of the neck, shoulder, arms and hands. Several recurrent attacks necessitated giving up all work at times. Medical treatment gave but temporary relief from excruciating pain. The x-ray revealed (Fig. 1) an impacted maxillary first premolar, and an infected third molar on the right side. The premolar was extracted giving temporary relief. Later the third molar was extracted and empyemia of the maxillary sinus was treated through the molar socket. A subsequent naso-antral operation by a specialist resulted in complete recovery.

The clinical history of this case leads us to conclude that the primary source of the antral infection was found in the impacted premolar tooth, with its concomitant abnormal cell metabolism and consequent lack of normal development of the naso-maxillary bones and contiguous soft tissues. An early discovery of the tardy eruption of the first premolar tooth and the application of the proper orthodontic stimulus to this tooth and its associated parts, might have resulted in its eruption into the normal position and saved the tooth to a life of usefulness, and its owner several years of suffering, loss of time, and much expense.

CASE II.—Miss F., a young lady twenty-three years old, was referred to me by a fellow dentist for examination. Emaciated and anemic, she entered the office supported on the arm of her sister. She had been in declining health for two years; had visited her dentist on several occasions to inquire about a certain swelling in the palato-maxillary region. Through visual and digital examination a diagnosis had been made of an impacted second premolar tooth. The x-ray (Fig. 2) confirmed this diagnosis and revealed apical root absorption of the first premolar, canine, lateral and central incisors, and necrosis of the palatal and maxillary bones in the surrounding area.

The family history in this case was negative; the parents, brothers and sister, being physically well developed, and robust in health, and so far as we were able to learn, each had what we might call a general average development of the teeth and associated parts. From a health viewpoint the case is clearly one of autoinfection from necrosis, caused primarily through faulty cell metabolism and consequent lack of proper development of the second premolar tooth and the contiguous bones and soft tissues.

Like the case reported above this young woman might have been saved long years of suffering, the loss of five or six teeth, if not life itself, by the early recognition of the unerupting tooth and the timely and proper application of orthodontics.

A case of more than passing interest is reported by Dr. W. H. DeFord, of Des Moines: A daughter of prominent people of Des Moines became violently insane and was sent to our state hospital, where she was treated for several years. At times she improved sufficiently to be permitted to go to her home. On one of these visits to her home her parents consulted Dr. DeFord. A dental radiogram was made which revealed an unerupted, impacted mandibular third molar. The offending member was extracted with speedy and complete recovery from the mental aberration.

While the anatomical relation of the impacted mandibular third molar to the other teeth may not be considered a malocclusion and is, in many cases, not amenable to orthodontic treatment, yet, it is decidedly a malocclusion of a severe type, and very clearly, in this case it did have a definite relation to the health of the possessor.

Reference has been made to the importance of early recognition of malocclusion in order that timely correction may be made. "An ounce of prevention is worth a pound of cure." To no phase or department of human endeavor is this time-honored truism so applicable as in the care and treatment of

the human teeth. Especially does this apply to correction of malocclusion of the teeth.

CASE III.—The orthodontic appliances had been adjusted and treatment had progressed some three or four weeks when the operator was stricken with a siege of fever necessitating his absence from the office for a month. During this interim the case was cared for by a fellow-dentist who, on our return to practice, returned the case to us.

As will be seen from the models (Fig. 3), the case was one of a lad of ten years. On our taking up the work following illness our troubles began. Inattention to appointments, lack of interest and adverse suggestion and criticism were indulged in by our patient. This seemed to be a reflection of parental sentiment, and altogether the toxic mental effect of maltreatment during our absence from the case. The child, parenthetically, was too young for treatment.



Fig. 3.—Case III. Showing occlusal view of teeth before treatment.

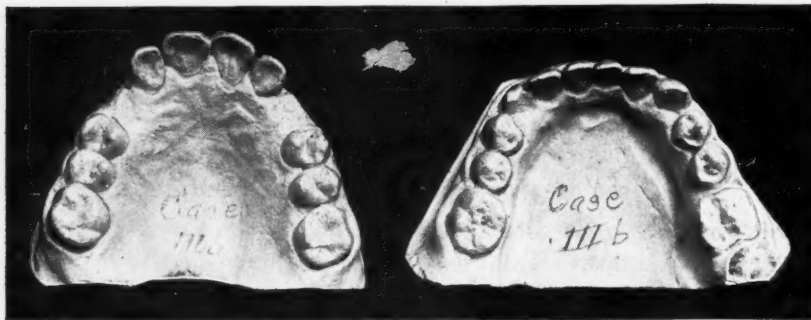


Fig. 4.—Case IIIb. Showing occlusal view after treatment. Note the maxillary spaces for unerupted canines, also the increased lateral diameter of the mandibular arch which, measured from center to center of the mesial sulci of the first premolars, is 12 mm.

The models and a letter setting forth our difficulties in the handling of the case were sent to Dr. W. J. Brady, then head of the Orthodontic Department of the Dental College of the Iowa State University, with the request that if we were scientifically wrong in undertaking treatment of the case at that tender age, we wished to be put on the right track, at the hazard of our reputation and loss of the case with all it meant to us in getting started in a new field of practice.

The return of the models and a three page, single-space typed letter setting forth the scientific reasons for early recognition and treatment of malocclusion so influenced the father of our little patient that we were enabled to carry the

case to completion with no further objection on the part of patient or parents. (Figs. 4 and 5.) That the sentiment prompting and responsible for our difficulties in the treatment of this case has been quite general to the dental and medical professions, and to the laity is evidenced by the fact that the mother was an intelligent woman, the father a prominent physician and the other dentist in the case, a man of some considerable experience in the general practice of dentistry.

In the consideration of malocclusion, the thought should ever be kept in mind that we are not mere "straighteners of crooked teeth," or yet, operators



Fig. 5.—Case III. Showing mandibulo-maxillary relation of the teeth before and after treatment.



Fig. 6.—Case IV. Note the mesial relation of the mandibular teeth and the normal relation after treatment of three weeks' duration with expansion arches and intermaxillary rubber ligatures.

of beauty parlors. Back of, and paramount to the mechanics of Orthodontia, or the mere appliances used in the correction of malocclusion is the principle of normal cell metabolism. The gentle stimulation to normal physiologic action of the tissue cells of the teeth, and surrounding structures at the time and age of the normal development of such teeth, and their surrounding structures is really and truly scientific.

Corrective measures undertaken during the developmental period of the bones of the face and jaws are carried to completion in far less time with less difficulty, and with infinitely greater chance of success.

CASE IV.—Models before and after treatment of a little girl four and one-half years of age illustrate the above point very nicely (Fig. 6). Models marked No. 1 showing decided mesioelusion of the mandibular teeth. Models No. 2 show correction at the end of three weeks. While we cannot insure a normal occlusion of the permanent teeth in this case we do know that a radical interference with the normal development of the maxillary and other bones of the face is removed and that these bones and the facial outline have a far better chance of normal development and harmonious relation than before. Also we have removed the handicap to normal physical development and possible ill-health through contraction of the dental arch resulting in a narrowing of the



Fig. 7.—Case V. Showing occlusal view before treatment.



Fig. 8.—Case Vb. Showing occlusal view after treatment. Note the increased lateral diameter of maxillary and mandibular arches. Maxillary arch expansion 6 mm. Mandibular and expansion 6 mm.

nasal passages with a possible consequent growth of adenoid tissue, mouth breathing, improper aeration of the lungs, etc.

The result certainly justifies the effort. It pays.

CASE V.—Models before and after treatment of a girl, ten years of age, (Figs. 7 and 8). The second eldest of a family of five girls. At five years of age there was evidence of adenoid tissue and an operation for this was performed. Between nine and ten years of age she developed ill health, became anemic and hollow chested and fell behind her class in school. The family physician pronounced it a case of developing tuberculosis. She was taken out of school. Rest and diet were prescribed. Mouth-breathing had become a fixed habit. Pacifier had been used in early childhood. When referred to us an exami-

nation of the throat was recommended. Recurrent adenoid growth was found and removed. Model No. 1 Fig. 9 shows malocclusion three weeks after this last adenoid operation. Orthodontic appliances were adjusted and the case carried to completion, as shown by models No. 2, (Fig. 9) in about a year and a half. Rest and diet were continued, during the treatment of the case.

Within a month after the beginning of the correction of the malocclusion she began to show a slight improvement in health. She was also instructed in deep chest breathing. Gradual increase in weight and development of chest was observed. The habit of mouth-breathing was gradually lost. With no other



Fig. 9.—Case V. Showing distoclusion and correction made in one and one-half years.



Fig. 10.—Case VI. Note artificial restoration of maxillary incisors attached to gold crowns on the canines; note also the loss of the mandibular second premolar and second molar on the right, and the second premolar and the first molar on the left side with consequent migration and tipping of the remaining molars and the general mutilated malocclusion.

than the above treatment, she had at the end of about one year and a half, developed a good healthy complexion, a full round chest with good lung expansion. She had returned to school and caught up with her class.

Today, about five years since the completion of the case and the making of the final models, she appears as well and strong as any young lady of her age. She has recovered from the mouth-breathing habit, except when having a cold. She has done good work in the grades and high school, and is really quite athletic in appearance and action.

CASE VI.—Figure 10 gives the models of a woman about 35 years of age. These models show a mutilated case of malocclusion through indiscriminate extraction of the permanent teeth and a long delayed substitution of bridges.

Indigestion, anemia, and general ill health were present to a marked degree. How much the malocclusion had to do with the health condition none of us can say. We may, however, reasonably presume that with the retention of the natural teeth in a healthy condition and a normal occlusion the patient might have enjoyed good health to a much larger degree.

CASE VII.—Fig. 11 shows models of a young woman twenty-one years of age. She was weak and anemic, being the victim of serious complications of



Fig. 11.—Case VII. Showing mandibulo-maxillary occlusion, with missing maxillary lateral incisors, and canines contacting with central incisors.

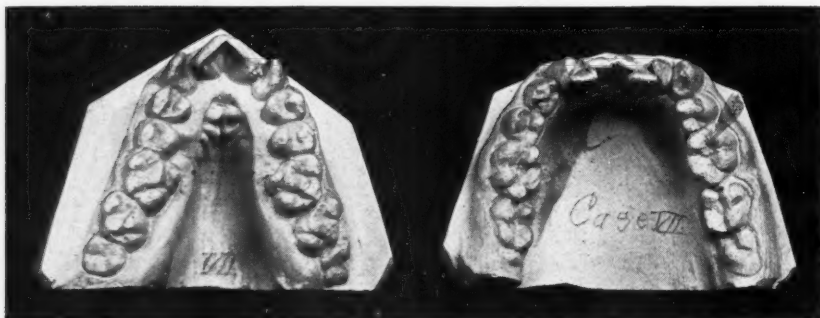


Fig. 12.—Case VII. Showing occlusal view of maxillary and mandibular arches. Note the extreme narrow maxillary arch, center to center of the first premolar mesial sulci 21 mm., with apparent broad mandibular arch and bunching of incisors and canines. Note also the high, V-shaped arch, measuring from the occlusal plane of the first molars to the palatal vault 22 mm., with a lateral diameter of 12 mm. between the mucous surfaces of the alveolar ridge at the mesial angle of the first molars, and 8 mm. directly above and $\frac{1}{4}$ of an inch below the summit of the palatal vault.

the vicious circle; with badly infected and enlarged tonsils and an enormous growth of adenoid tissue. She was also becoming quite deaf. Note the extreme high vault and narrow arch in maxillary region and the wide arch and overlapping of anterior mandibular teeth. (Fig. 12.)

Through the courtesy and influence of the medical specialist who was treating this case and who called us to assist in the operation of adenectomy, and tonsillectomy, we were able to procure these models, and to keep in touch, to some extent, with the history of this case subsequent to the operation and

treatment, and the making of our models, in the summer of 1908. For a period of several years following the initial operations by this specialist the patient returned at more or less frequent intervals for the treatments of ear, nose and throat lesions. At the present time, we learn she is enjoying fairly good health, although no correction of the malocclusion was ever undertaken.

We may safely assume that any degree of health she does enjoy may be attributed primarily to the fact that she belongs to a family of very healthy, hardy people, who live on a farm, where plenty of fresh air and wholesome food is obtainable. At thirty-four years of age she is not married, and no doubt living an unhappy life because of a physical handicap of malocclusion of the teeth, facial deformity and concomitant ills, due to abnormal cell metabolism in the developmental period of her life.

In concluding these rather rambling remarks on the interrelationship between the general health and malocclusion of the teeth, the one thing I would emphasize, and endeavor to impress upon your minds, is the importance of the recognition, in the early life of the child, of malocclusion of the teeth or any developmental deficiency tending toward such malocclusion and the application of proper remedial agencies during the formative period of growth.

To this end I would recommend a hearty cooperation with our brothers of the medical fraternity in the matter of dietetics and all such matters as pertain to the general health of the little folk coming under their and our care.

For the inspiration and assistance given to me in many vexing problems that have arisen in my somewhat limited experience in orthodontia in connection with a rather busy general practice of dentistry, I desire to pay a tribute to my old time friend, our beloved dean, Dr. W. J. Brady.

A very busy man we all agree. But never too busy, or so much engrossed in his own private practice, and close connection with work in colleges, and as official head thereof, to find time and delight in listening to and answering the Macedonian call, "Come over and help us."

For his helpfulness to the dental profession of my own state and his many courtesies and assistance to me personally, I desire to thus publicly thank him.

THE BEST AGE FOR TREATMENT IN RELATIONSHIP TO RETENTION*

BY GEORGE NORTHCROFT, L.D.S.

IT MAY be remembered that Gobind, the one-eyed, told Kipling that "when a man has come to the turnstiles of Night all the creeds in the world seem to him wonderfully alike and colorless," and, I confess, there are models in my collection that seem to prove and disprove any dogma.

Recently we have been told that this Society narrow-mindedly confines itself to questions of treatment which remain unanswered, and which merely end in futile and unproductive discussion; that we lack guiding principles except of the most elementary kind. One would have thought that listening to such authorities as Keith, Mellanby, or J. F. Colyer, showed our hunger for establishing fixed principles on the broadest lines, that this is that road to successful treatment which all of us are striving to find, and to the vast majority it is the attainment of this goal by ourselves, for the public weal, that leads to a participation in the profession at all. After seeing the display of many interesting treated cases one came away with the impression that one principle had been forgotten that we thought had been established years ago, and should now be taught to, and known by, the profession at large—that is, the necessity of commencing treatment at an age so young that gross irregularities have not become established; at an age when growth is more certain of taking place, and probably only needs the right stimulus, whether mechanical or physiological, or both, to produce normal results. It is the apparent necessity of repeating this oft-told tale that has caused, in all too short a time, the preparation of this paper, and when leisure is obtained to go more thoroughly through models, now numbering some two thousand, it is hoped that some statistical results may be produced of lasting value.

J. E. Spiller, in March, 1913, answering the question, "at what age to commence treatment of postnormal cases," with characteristic modesty said "he did not know," but gave many cogent reasons for selecting *eight* as the ideal age. The same age would seem to apply to neutroclusion, possibly a little later, eruption is such an uncertain factor. Prenormal cases, if anything, should be taken earlier. What should be insisted on is the principle of early treatment, and from observation of a series of models of the same mouth taken over successive periods, it can be proved that when once an abnormal condition exists, that condition becomes progressively worse up to the maximum at which stable equilibrium is established between all the forces of development, non-development, muscle pressure, air pressure, etc., and therefore, as far as practical, treatment should commence when abnormal conditions are at their minimum.

*Read before the British Society for the Study of Orthodontics, March 9, 1921.

Now we do not always learn the most useful lessons from treated cases, but sometimes from those cases that might have been treated, and can then study at what age simple cases become complicated. For many years the writer has advocated securing models of all the children in one's practice so as to visualize how far Nature is helping the developing jaws and when, and how much, outside aid must be sought. This implies that every dental surgeon should be an orthodontist, and that this aid to diagnosis which the specialists could obtain rarely otherwise, would release him from having extremely complicated cases to treat at all, if only mouths were looked after and cases treated in time.

The vexed question of retention was dealt with in a paper read at the International Dental Congress of 1914, but other vexed questions have loomed



larger since then, so that it might be prudent to recapitulate the conclusions then reached. The time factor varies from no time at all in "natural retention" to four years, and even permanent retention. No data are available to guide us as to how long any particular type of case should be retained. Cases commenced at eight years should certainly be watched till ten or even later, especially when there is lack of development in the canine region.

There has been no time to make lantern slides for the purpose of this paper, but I would impress on the Society the necessity of having all communications lavishly illustrated, as it thereby renders such communications so much more interesting and intelligible.

1. CASE 86. Female six years. Normal anteroposteriorly, but apparently no spacing taking place, therefore, according to Bogue, should be expanded. Marked "to be watched."

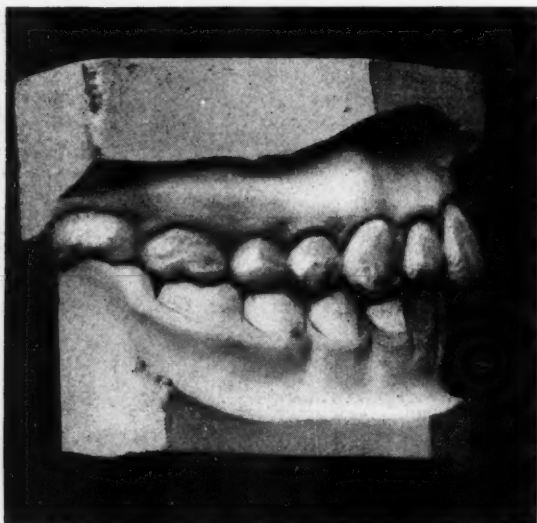
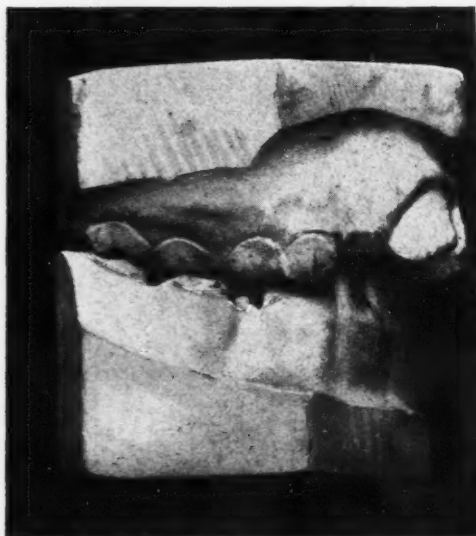
86c. 15.0. 86a and 86b showed that no treatment would be necessary.

Shall we say perfect occlusion? Nature has done everything necessary. Note "small teeth in large jaws." Very late eruption of $\frac{7}{4}$ | . | $\frac{7}{4}$ not yet in occlusion. Foreshadowed imbrication of $\overline{2}$ in Model 86a entirely disappeared. Palatal measurements:

c		c	20.7	3		3	23.
d		d	24	4		4	25.4
e		e	27.5	5		5	29.7

The average natural increase in palatal dimensions is nearly 2 mm.

This shows the wisdom of waiting till 8 years old to see if development is normal according to type.



2. CASE 299. Female 7.3 years. Bottle fed. Partly mouth breather, no adenoids. Mother postnormal.

Double postnormal $\frac{\quad}{\text{edc}} \frac{\quad}{\quad} \frac{e}{e}$ septic and removed.

299b 7.6. I.M.T. applied. 8.3. Elastics only worn at night. Lower lingual arch. 9.10. Apparatus removed.

299j. 14.0. Occlusion normal. Note $\overline{5}$. This case shows the result of treatment commenced at an ideal age, retained by decreasing mechanical force over a considerable period of time—two years and four months.

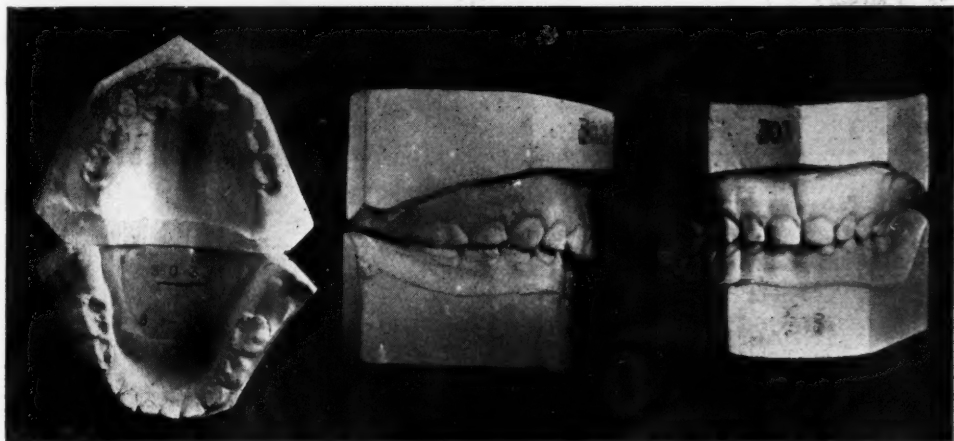
3. CASE 303. Female five years. Adenoids removed at this age. Note postnormal occlusion on right side, slight proclination of maxillary incisors, with lower center, half a tooth to the right. Does this mean a congenital defect, moulding during birth, finger-sucking? Normal growth presumably taking place judging by spaced incisors, no earlier models available to check this observation.

303b. 6.6. There is an interesting attempt by Nature to correct pre-normal condition of $\overline{6} \mid$ by forward thrust of $\overline{6} \mid$, $\overline{c} \mid$ having been pushed out of the arch. But note the impacted condition of $\overline{6} \mid \overline{6}$ actually causing absorption of $\overline{e} \mid \overline{e}$, denoting faulty development of maxilla and its sinuses. It is in these cases that tilting back the $\overline{6} \mid \overline{6}$ by intermaxillary traction would probably prove successful, the cases successfully treated by this method have not been seen at this age, and therefore the method has been advocated for treating all so-called postnormal conditions.

303c. 7.10. Center nearly normal. Nature has at this age produced her maximum effort at correction, and unaided will be seen to fail in the fight for symmetry and beauty.

303d. 8.1. Even in three months the centrals have inclined further forward, space forming for $\overline{2} \mid \overline{2}$.

303e. Was sent away to another practitioner with suggestions for treatment.



303f. 11.1. Three years later. Note peg-shaped $\overline{2} \mid$ rotated $\mid \overline{2}$ and $\overline{e} \mid \overline{e}$ have been forced out, not extracted, it is therefore a case of "self-mutilation." $\overline{5} \mid$ has been pinched out on right side, but is present, probably in palate, and $\mid \overline{3}$, according to x-ray, is erupting in palate. Note rotated $\overline{3} \mid$. Prenormality much worse.

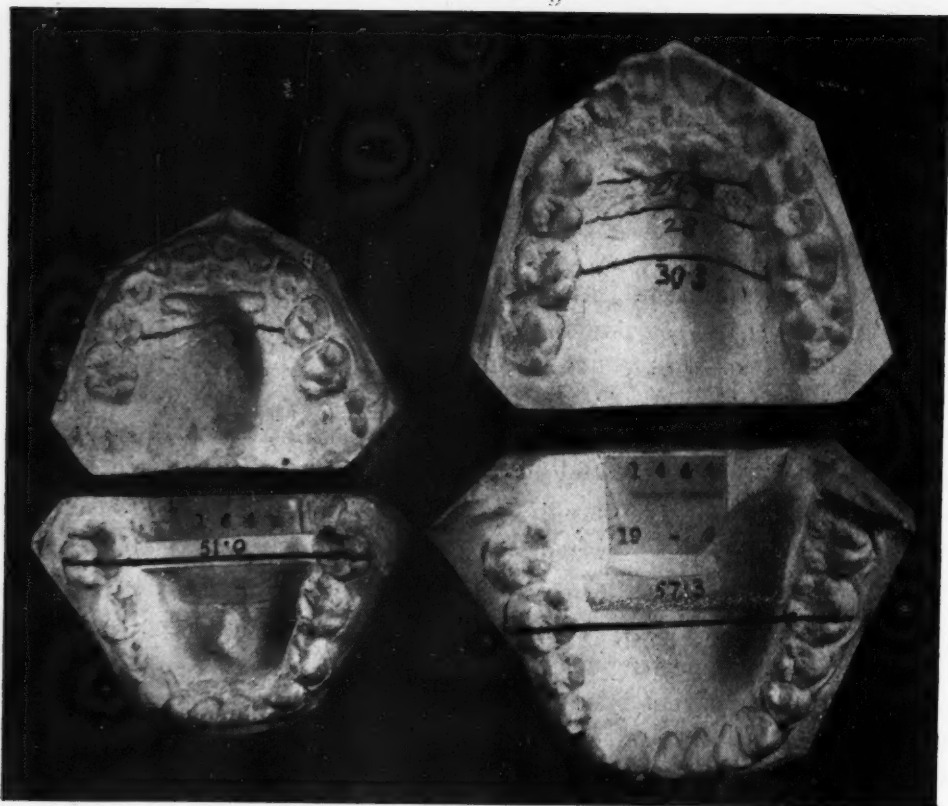
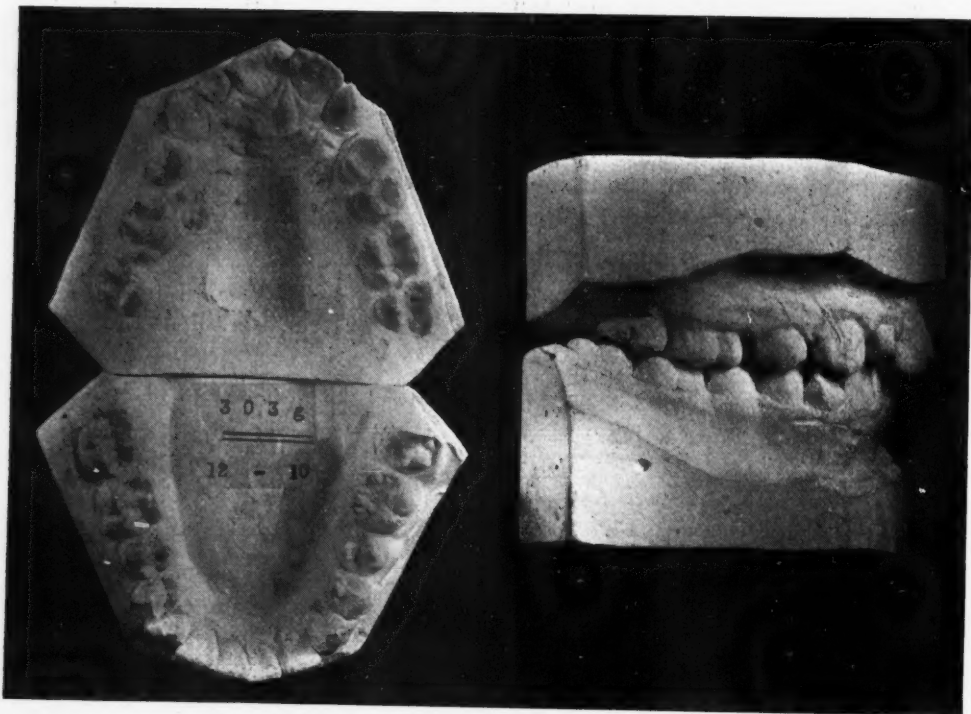
303g. 12.10. $\overline{7/4} \mid \overline{7/4}$ erupted, fully developed prenormal $\overline{6} \mid \overline{6}$. $\mid \overline{3}$ still unerupted, $\overline{5} \mid$ in palate and $\mid \overline{2}$ rotated. This condition could have been easily corrected at 8 years old, and should never have been allowed to become progressively worse.

4. CASE 144. Female 5.4. Mouth breather. Reported no adenoids.

144a. 5.10. Note early eruption of $\overline{1} \mid \overline{1}$. Started expansion at 6.9. $\overline{21} \mid \overline{12}$ a straight line owing to lip pressure.

144f. 7.1. Apparent maximum expansion obtained in four months. Retention plate inserted.

144k. 7.11. Slight collapse noted. Upper and lower expansion plates again worn, and retention continued with changing plates as various temporary teeth were lost. Retention was prolonged until 11.0 as mouth-breath-



ing persisted; but at this time it was supposed normal bone growth had taken place.

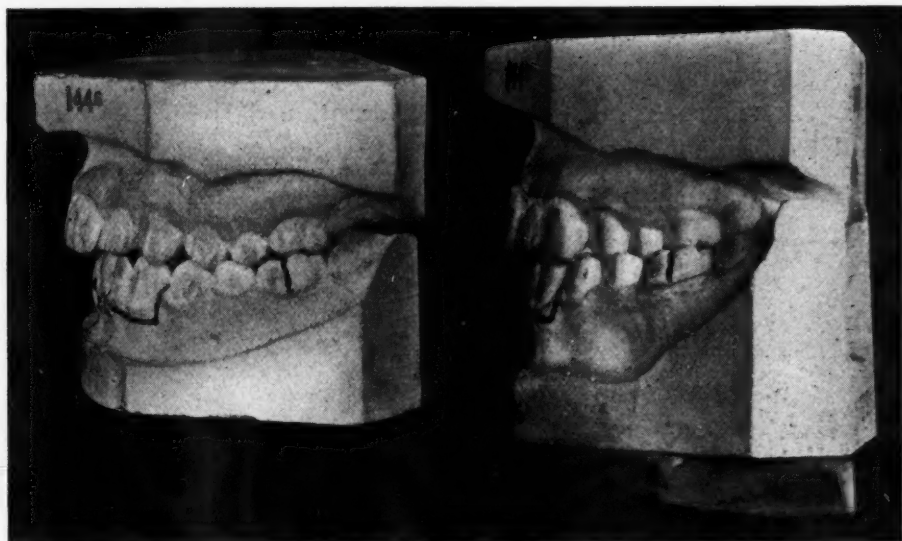
144r. 12.6. An interesting, and it is believed an original, observation now comes into play. The bucco-lingual diameter of $\overline{d} \mid$ and $\mid \overline{d}$ is 8 mm. The bucco-lingual diameter of $\overline{4} \mid$ and $\mid \overline{4}$ is 10 mm.

$$144k. = \frac{8}{10} \quad \frac{29}{25} \quad \frac{8}{10} = 45$$

$$144r. = \frac{8}{10} \quad \frac{29}{25} \quad \frac{8}{10} = 45$$

From the palate measurements it looks as if the expansion has collapsed; in actual fact outside measurement shows that buccal pressure has not resulted in collapse.

All this time the mandible has been steadily growing, and what looks like a maxillary relapse is in reality a continued buccal growth of mandible up to 19.3.



144s. 13.7. The greatest buccal widths at $\overline{c} \mid \overline{c}$ and $\overline{6} \mid \overline{6}$ for 144a are 28 mm. 51 mm.

144t. 19.3	144k are 31 mm. 53.7 mm.
	144r " 32 mm. 55.5 mm.
	144s " 32.4 mm. 56.4 mm.
	144t " 33.3 mm. 57.3 mm.

Total growth of maxilla at $\overline{4} \mid \overline{4}$ is 6 mm. Total growth of mandible at $\overline{3} \mid \overline{3}$ is 5.3 mm. and at $\overline{6} \mid \overline{6}$ is 6.3 mm. Probably stable equilibrium is now established.

One can, of course, only picture what this mouth might have been like if no treatment had been undertaken.

5. CASE 220. Male 3.3. Adenoids. Warned parents.

220b. 5.11. 6.1. Lower $\overline{1} \mid \overline{1}$ erupting distally. Adenoids removed.

220d. 6.11. Double postnormal. Imbrecated lower incisors.

220f. 7.10. $\overline{1} \mid \overline{1}$ rotated. Lower $\overline{21} \mid \overline{12}$ worse. Treatment advised.

7.11. Expansion plate inserted.

220j. 9.6. Expansion obtained 9.4 mm. Postnormal. Cured.

220k. 9.11. Plate abandoned 9.9, collapse commencing it was recognized that the case had been overexpanded, and this was expected.

220l. 13.4. Expansion collapsed 3 mm. Total expansion retained 6.4 mm.

220m. 15.3. Treated on exactly the same lines as previous case, but in the former adenoids were not removed and mouth breathing persisted, and unless equilibrium is established nothing but permanent retention would avail.

6. CASE 258a. 2.8. Prenormal. Whether congenital or acquired is doubtful. a erupted first. Palatal width d | d 24.5 mm. Treated 2.11 to 3.3. Natural retention.

258f. 12.6. Bite normal. Natural expansion 2.5 mm. Width between 4 | 4 27 mm. Very early treatment was certainly successful.

7. CASE 191. Male. Untreated case. Shown in contrast to previous one.

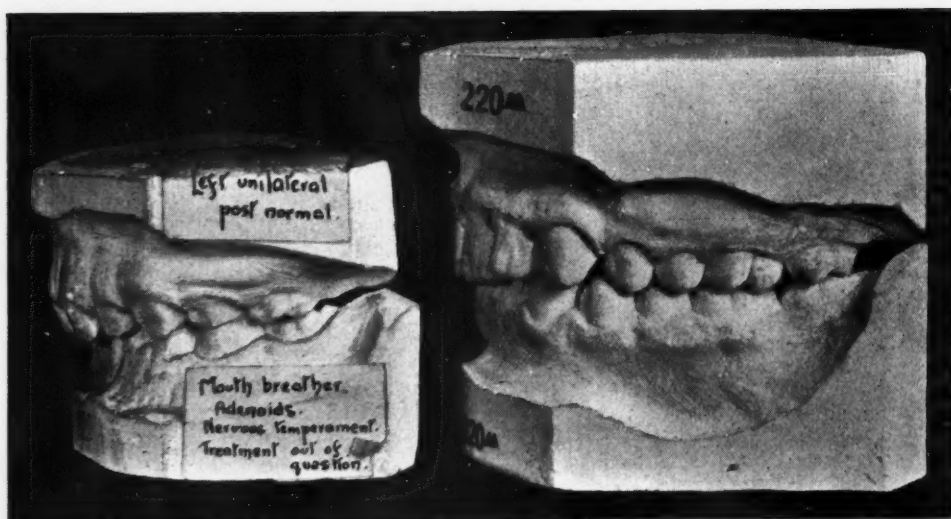
191b. 2.7. Crowded incisors. Supplemental e. Needs expansion later.

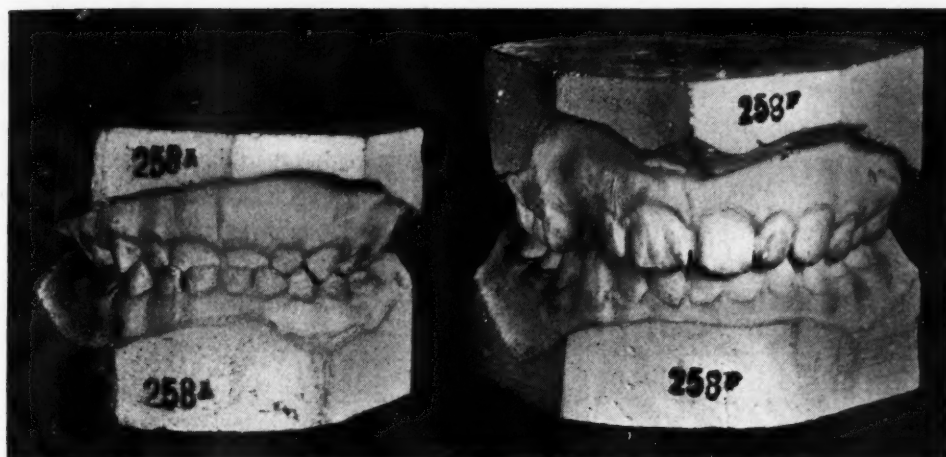
Mouth breather. Reported no adenoids. $\frac{e}{e} | \frac{e}{e}$ unerupted at this age.

191g. 5.4. Supplemental e removed at 3. ba | ab more crowded.

191j. 7.4. Hypoplasia and retarded eruption $\frac{\%}{\%} | \frac{\%}{\%}$. Palatal width between d | d 25.5 mm.

191l. 14.7. Note collapse of upper arch 2 mm. at 4 | 4. Adenoids re-





moved at eleven years, too late to effect development of maxilla. Complications gradually increasing.

X-ray shows $\overline{5}$ missing, $\overline{5}$ pinched out of arch by forward movement of $\overline{6}$. Supplemental $\underline{3}$ with $\underline{3}$ buried in palate.

Female. The buccolingual diameter of \underline{d} and \underline{d} is 9 mm. The buccolingual diameter of $\underline{4}$ and $\underline{4}$ is 9.4 mm.

$$\begin{array}{rcl} 191j = 9 & 25.5 & 9 = 43.5 \\ 191l = 9.4 & 23.5 & 9.4 = 42.3 \end{array}$$

Showing 1.2 mm. natural contraction between 11.0 years, when adenoids were removed, and 14.0.

It is hoped that the analysis of the seven cases shown tonight, the simplicity of the treatment involved and the not unsuccessful results of that treatment, will help to establish the principle that treatment should be begun about the age of eight, and that retention should be continued until a reasonable time has elapsed for bone to grow and muscle stresses to become balanced. That if a relapse of expansion does take place it will leave the case, at any rate, much better than if no treatment had been attempted. Leaving cases till a later age can but make the treatment harder, more painful, more prolonged, and a successful result more doubtful.

HAROLD CHAPMAN, L.D.S.Eng., D.D.S.Penn.:

You will remember that at our last meeting one member proposed that the discussion of Mr. Cale-Matthews' paper be continued at this meeting, and it seemed a desirable course in view of the interest it aroused. It will also be remembered that several who took part in the discussion of the paper were reminded that they were speaking away from the subject indicated in the title of the paper. I personally sympathized with those members, as the latter part of the communication tempted one to digress. This evening, Mr. Northcroft's paper has widened out the scope for discussion, and we must all feel grateful to him for the opportunity he has afforded us of continuing part of the discussion of the February meeting, as well as for his most excellent paper, which is of such practical value and is based on his experience.

The title of Mr. Northcroft's paper is such that it made an impression on me; I wondered what was the significance of the last four words: "in relationship to retention." Why was the essayist not content to discuss the best age for treatment? Undoubtedly he wished to emphasize the importance of retention, for it can be of little value to move teeth if they cannot be retained—we know quite well that teeth can be moved at any age, but up to what age they can be moved and will stay in their new positions, after a definite period of retention—without (artificial) permanent retention—is unknown, as far as I am aware.

The writer of the paper has shown us actual cases to prove that eight years is a good age for treatment and we must agree that he has succeeded. Yet on theoretical grounds I think a much earlier age might well be chosen, and on practical grounds I believe that treatment should be undertaken earlier than has been advocated; in fact I would say that any abnormality should be corrected as soon as it arises—that is theoretically: and practically that its correction should be undertaken as soon as it is possible to treat the patient. You will say that such statements should be supported.

The experiments of Baker, of Boston, are known to you all; he took two young rabbits from the same litter; the molar series on one side of one rabbit he rendered functionless by grinding the teeth so that they did not occlude; this rabbit compulsorily masticated on the other side only. The second rabbit was kept as a control. The entire skull of the latter developed fully and symmetrically, but the skull of the former developed fully on the functional

side, but was much underdeveloped on the nonfunctional side; comparison between the size of the zygoma and its distance from the body of the skull on the two sides may be taken as an indication of this. This is a marked and clear example of lack of function being followed by lack of development. The teeth on the one side were not used; in fact they were of no use; in consequence the muscles of mastication were not used and so the bones to which they were attached did not develop to the extent that they did, on the functional side. I should mention that these rabbits were killed when a few weeks old.

I have no doubt all this seems to be rather away from the point, but now let me connect these experiments with a supposed case of irregular teeth in a patient—a case of odonto-prosopic orthopædies. The simplest one I can suggest is a typical case of Angle's Class I or neutroclusion. Such a case is an example of lack of development in every direction—laterally, anteroposteriorly and vertically; in other words the jaw bones are a miniature of what they ought to be.

We look at models of such a case; what is suggested to our minds? Irregular teeth—that is the most vivid impression we receive. We are apt to forget that irregular teeth are in ninety-nine cases out of a hundred but the visible expression of a maldevelopment of bone, just as the lateral curve in a femur or a bow leg is an expression of a similar maldevelopment. In the one the bone malformation is patent to all, the result of wrong stresses on the bone; in the other we must look at the deformity through the teeth and endeavor to visualize what the shape of the bone is and what it would have been had development been normal. In the supposed Class I case the stress was normal in direction but abnormal (insufficient) in degree. Now from Dr. Baker's experiment, it is fair to assume that not only the bones containing the teeth are maldeveloped, but also *all* the bones of the skull. Take one bone, the mandible: this is too narrow, too short, and has not enough height; the condyles are too close to one another, they are too close to the central incisors and to the mental process; the inferior borders approximate one another too much, and the vertical height of the bone is insufficient. The same applies to most of the bones of the skull—certainly to half of them if we are to place any value on the experiments I have referred to. Of course there are varying degrees of such maldevelopment and fortunately they are seldom as severe as the example referred to.

Now we proceed to treat this case of Class I; we enlarge the arch of teeth laterally and anteroposteriorly so that all the teeth may fall into good alignment; we are all agreed there is no difficulty about this, we have been shown examples of such tonight, and at the last meeting, whose ages varied from say 5 to 15 years. Having got the teeth in alignment we must again endeavor to look through them and behold the bone structures beneath. We can only assume what we should see. Suppose the abnormal bone growth to have been incited (or should I say the bone growth to have been inhibited) at 2 or 3 years of age and continued up till 8 years, when treatment is undertaken. The teeth are put in alignment as Nature intended, but are the condyles widened

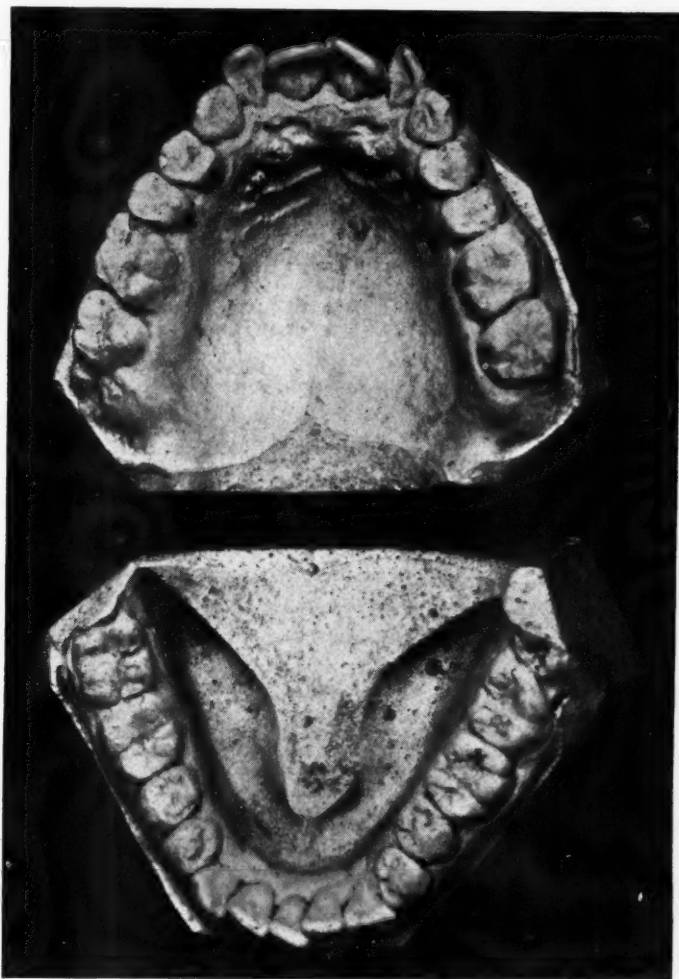
to correspond, are the inferior borders widened to correspond? The distance of the condyle to the central incisors is perhaps nearer to normal, but how about the distance from the condyle to the mental process? Say the treatment takes 6 months or a year; in that time has the lack of growth of the bones of the skull that should have occurred from 3 to 8 years been made up? These are questions of the greatest importance; the lack of growth will have been made up better than if the case had been treated at 15 years, but not so well as if it had been treated at 5 years of age. In any of these cases it is difficult for me to believe that the normal growth can ever be secured unless treatment be instituted as soon as inhibition of growth occurs, and the longer it is deferred the less the probability of getting normal development becomes, and so the less the probability of natural permanent retention. To make matters worse from the point of view of retention, the new positions of the teeth have been obtained by mechanical apparatus acting directly on them and not by bone development resulting from muscle activity. Keith says in "*Menders of the Maimed*": "In all deformities I believe that the transformation of bone is a direct result of defective, unbalanced muscular evidence." Whilst this sentence only indirectly supports my argument, it does so very strongly in conjunction with the whole chapter in which it occurs, and I need only add here one more line from it: "The amount of growth in a bone depends upon the need for it." Now this is not strictly true if we take the view that the growth of the jaws should suffice to contain the teeth in normal alignment, etc., but presumably it is if we take the view that the jaws are developed sufficiently to masticate the diet that the individual has consumed. For the argument to hold good it would have to apply to teeth also, *i.e.*, the amount of growth in teeth depends upon the need for them, but unfortunately such is not the case and, if it were, I imagine orthodontics would be unknown as we know it. The trouble about orthodontics is that the teeth are formed so early that their development, growth and size is uninfluenced by the work they will have to do, but the growth and size of the jaw which is to contain them is so influenced. It therefore seems of the utmost importance that all children undergoing treatment of this kind should be put on the most vigorous diet in order to ensure permanent natural retention.

I have spoken too long, but this is a question which has worried me considerably of late, and whilst one knows what good results are to be obtained at 8 years of age, and for older children, without extraction, that is not the point the title of Mr. Northcroft's paper makes, which is "the best age for treatment in relationship to retention." I should have preferred him to have fixed a younger age. The writer and I have discussed this matter many times, and I would have liked to amplify my arguments still further on this occasion, for material to do so crowds before me, but now I must content myself with assuring Mr. Northcroft of my own gratitude to him for writing this paper. The short time in which he has done it furnishes me with a weapon, which I sadly need when asking members to write papers, but perhaps now they will come forth spontaneously like teeth in an arch already crowded, but receiv-

ing a warmer welcome. I shall be able to say it doesn't take long—leave the long part to those who discuss it.

ORTHODONTIC TREATMENT REQUIRED AT 23 YEARS OF AGE

Mr. F. Bocquet Bull said that this was the case of a cinema actress, who had the two upper laterals markedly outstanding, and these showed up in a very pronounced way under the light used in the cinematograph studio. The



case was quite an urgent one, because the patient told him that she had lost three contracts owing to the refusal of the producer to pass the presentation. Whatever treatment was suggested must be to a certain extent experimental because in giving treatment one might worsen the condition. He added that there was congenital absence of one of the lower incisors. He showed a model of the case.

DISCUSSION

The President said that he thought some of the most difficult cases that orthodontists had to deal with were these cases of irregularities in adults which had received no previous

treatment or in which the treatment had been totally inadequate. They were often obliged in these cases to resort to some mechanical treatment in the form of fitting crowns rather than adopt an ordinary orthodontic procedure. It was a matter of considerable urgency to a patient like this, who was unable to follow her profession on account of her appearance.

Mr. G. Northcroft said he thought that orthodontic treatment as commonly understood was out of the question. This was, on account of the time which would be taken and the serious interference with the pursuit of the patient's profession, making it unadvisable at that late age, to undertake the correction of the irregularity by ordinary means. The case was complicated by the congenital absence of one of the lower incisors, which would make the question of retention an extremely difficult one, and probably unsuccessful in the end. He would, therefore, suggest crowning these teeth. In America he had no doubt that many men would suggest "jacket crowns," thereby dodging the danger of apical infection. Otherwise one had to take the responsibility of destroying the pulps of these teeth, but in this case, the patient was aged 23, and therefore not likely to be a cinema actress for more than ten years longer, if one was successful for at any rate ten years, one might be justified in cutting off the teeth and crowning in the ordinary way. This was on the supposition that *Mr. Bull* did not see his way to making porcelain jacket crowns. The speaker had made some, but they were difficult, and he thought that in the confined space with which *Mr. Bull* would have to work, as shown in these particular models, the jacket would be so extraordinarily thin as to make the procedure almost impracticable. Therefore he would be in favor of devitalizing the teeth and crowning them. The next point to be considered—and it would be extremely interesting to hear from other members who had experience—was with regard to the liability of artificial teeth to show black on the screen. That had been his own experience with a patient who was a screen actress. But he could not be certain whether these particular teeth were Ash's or American. The teeth should be crowned with the dowel or Logan type, where one had a large thickness of porcelain very highly translucent, which probably would not give black shadows in very strong light. He would suggest that *Mr. Bull* should get a model or patient with some American porcelain teeth screened as an experiment.

Mr. W. Rushton said that some years ago *Mr. Samuel Headley* published a number of cases in which he performed orthodontic treatment for adults up to 30 years of age. There was not the slightest doubt that if the first premolar were extracted on either side, these teeth would be perfectly regular. Whether that would take too long, in view of the lady's professional engagements, he could not say. That was for her to decide.

Mr. Bull thanked *Mr. Northcroft* for his suggestion which he thought was probably the one he would adopt, and the one he had in view. With regard to *Mr. Rushton's* suggestion to extract the two premolars, he thought that probably any treatment which that would involve would be too long; also it would be perhaps something of a calamity if one did not quite succeed, for the unsightliness might be only slightly shifted, and he presumed that when these cinema actresses smiled, they smiled to the fullest extent. On the whole he was rather inclined to *Mr. Northcroft's* opinion.

DISCUSSION ON MR. NORTHCROFT'S PAPER

The President said that the Society owed very much to *Mr. Northcroft* for the valuable work he had done for it in the past, and tonight those present would all agree that the debt had been increased by the paper which he had just presented. They could not help admiring the really beautiful models which *Mr. Northcroft* always brought forward when he showed his cases at the Society meetings. He (the President) thought that *Mr. Northcroft* had demonstrated very clearly the great importance of the early treatment of orthodontic cases. As *Mr. Northcroft* had said, they might possibly learn more from observing the results in cases which had not been treated than from those which had been dealt with successfully. He would certainly strongly support his plea for the taking of models very early in childhood. Models should be taken and occlusion recorded at the earliest possible moment of all children who came under their care, and they must remember, as *Mr. Northcroft* has already mentioned, that in the normally developed jaws of a child of

five the temporary teeth should be spaced, and, moreover, that there were other changes taking place, apart from the spacing of the teeth, which indicated the growth of the jaw. There was, as had been observed by others, an alteration in the relationship of the mandible to the maxillæ, and frequently, just previous to the eruption of the first permanent molar, the incisors tended to occlude edge to edge instead of posteriorly, and this edge to edge occlusion, which was the result of the growth of the jaws, did control considerably the conditions with which orthodontists had to deal in the future. With regard to Case 1, which Mr. Northcroft rather hinted as being a case which tended to disprove Dr. Bogue's view that the absence of lack of spacing was not necessarily an indication of a tendency to orthodontic deformity in the future, he (the President) thought that perhaps one might suggest that in that particular case orthodontic deformity might have occurred if the teeth had been as large as many teeth were, and for that reason Dr. Bogue's view was not altogether contraindicated by the case Mr. Northcroft had quoted.

Mr. Chapman showed models of a case of Class I the treatment of which was started at six years and four months of age.

Treatment occupied eight months. The increased width in the molar region, one year after retention was started, amounted to 7 mm. Retention was maintained for two years and two months, except in the case of a lower central, which was rotated; the tooth was retained for two years longer. Models taken recently, almost ten years after treatment was started, show expansion of 4 mm. in excess of that before the case was started, or a relapse of 3 mm. on the expansion as it existed one year after retention was instituted.

Mr. Cale Matthews said that the Society had had a very instructive and delightful evening. The difficulty of treating cases in the early stages was largely due to the ignorance of the parents. He thought that as general practitioners they must emphasize the necessity of children being sent to them early. Only so would material be obtainable for treatment. The statistics—if one might so term what Mr. Northcroft had put before them that evening—were most interesting. It had always been his own ambition—and he thought it should be one's ideal—to correct his cases by natural position, and the maintenance of position by artificial means was always to be deprecated when it was possible to do without it. Fears regarding long retention were often groundless. If the case was properly corrected, the period of retention need not be so long. He did not quite follow Mr. Northcroft's opening remarks, but he would have thought it so obvious as not to need expressing in a paper before this Society that the necessity of commencing treatment at the earliest age possible should be taught to and known by the profession. Thanks were due to Mr. Northcroft for the fine display of models illustrating the cases at every stage which he had placed in the epidiascope.

Mr. W. Rushton said that the only thing which struck him in Mr. Northcroft's second case was the amount of trouble the child was saved by not being treated at an earlier stage. It was a desirable thing to have left that case until an age when the teeth obviously had to be extracted.

Mr. Maxwell Stephens said that he thought Mr. Chapman was under a little misunderstanding in one respect. Bone developed according to the muscular stresses which made a demand on it. He recalled the fact that the trabeculæ of bone in the case of the femur forming the process in which the muscle was inserted arranged themselves according to the stress. He could not help thinking that if the stress was normally placed in the bones of the face as early as possible in the existence of the child some such formation parallel to that in the femur must be induced. He would like to ask one question of Mr. Northcroft: What happened to the wisdom teeth in those cases which he had placed in normal occlusion early in existence?

Mr. Harold Chapman asked whether he correctly understood Mr. Northcroft to say that in the case in which the molars went lingual to normal in the upper jaw, and which were shown by him in a later model in correct relation with the teeth, they returned to buccal and correct relationship of their own accord without any treatment.

Mr. Northcroft said that *Mr. Chapman* was mistaken as to the conclusion of the case; they finished up by being lingual to normal.

Mr. H. C. Highton asked what method *Mr. Northcroft* had adopted in the case of pre-normal occlusion which he had treated. He had treated a case aged 5 years himself with no relapse occurring. *Mr. Northcroft's* case was treated at 2 years 11 months (Case 7).

The President said that there was one point with regard to the question of early treatment which perhaps might not be fully understood. It was with regard to the date which *Mr. Northcroft* suggested. It occurred to him that some of the members, in discussing the early treatment, were considering rather the mechanical treatment and excluding the other. *Mr. Northcroft* did mention that the treatment so far as adenoids were concerned should be dealt with as early as 5 or 6, and he thought that was a very important part of the treatment.

Mr. S. F. St. J. Steadman said that he thought they must be cautious before drawing too large a conclusion from the case of the rabbit which *Mr. Chapman* had instanced. He (the speaker) would be the last to say that function was not of the greatest importance in bringing about the growth of jaws, but if one got rid of all the defective teeth in a child, one still got, apparently, jaws of normal sized growth. One would assume from *Mr. Chapman's* paper that if teeth were taken out early in the child's life there would be less growth of jaw than normal. But that was not so. He had taken out a large number of teeth in children for caries, and got apparently the normal growth.

Mr. George Thomson referred to the difficulty of getting the co-operation of patient and parents. He remembered a lady telling him that her mother died when she was very young, and her father was a very careful disciplinarian. She was in the habit of biting her nails, and every effort was made to get her by discipline to discontinue that habit. One day when she was 15 years of age, a lady visitor commented upon her nice hands, but added, "You will not have nice hands if you bite your nails." It was such a word as that, spoken at the psychological moment, which availed to make her stop the habit. Their advice in the matter of what should be done orthodontically was often disregarded, but much depended upon getting the patient—or in the case of a child his parents—to see for themselves, and then they were assured of all co-operating together. With regard to the noneruption of teeth, he knew of a case where this difficulty was present at 12 years of age, when there was no sign of the premolars in the lower jaw coming through at all. They all knew how erratic teeth very often were as to the period when they erupted. There were thus practical difficulties in the way of fixing any definite age for the treatment of these cases. *Mr. Northcroft's* suggestion—for which they were much indebted to him—was to fix a period such as 8 years of age, and this seemed really the ideal age if the other conditions were favorable for carrying out the treatment.

Mr. Northcroft, in reply, said that he had to thank the meeting for its very kind reception of his all too feeble effort. *The President* had referred to the question of Bogue and early treatment. It was his (the speaker's) desire simply to say a word of caution against taking Bogue too literally. He thought one was quite justified in waiting till the age of 8 to see what size the permanent teeth were going to be before one started treatment. There were exceptions to all rules, and there were some very obvious cases of overcrowding and irregularity of the temporary dentition. But when one got the ordinary nonspacing of the teeth at the age of 5 one ought to be cautious about expanding at that age. *Mr. Steadman* had brought up the question of cases in which all the temporary teeth had been removed and a perfectly regular permanent dentition had resulted. Such cases were in existence without a doubt, and he himself had several cases where either the left or the right side of the lower jaw had been in lingual occlusion, and that side consequently not functioning (although the teeth had been there, they had not been used), and yet the jaw had developed very nearly normally. The anteroposterior diameter of the jaw had not been interfered with at all, and the lateral diameter only slightly.

He had been very much interested in the 6-year-old case that *Mr. Chapman* had

shown, for it admirably illustrated his own point that if teeth were found erupting in a jaw in a child aged 5 or 6 that ought to erupt in the jaw of a child aged 7, it did not necessarily mean that there was a lack of bone growth. The jaw was the jaw of a child aged 5 or 6, as the case might be, but the teeth were adult teeth in size and had tried to come up in position in a jaw one or two years too young, and thus there was crowding. He did not think it was necessary to argue that there was a lack of development in the jaw. The bone had not had time to grow sufficiently. Mr. Chapman had brought up another point which seemed absolutely contradicted by the jaw that he himself had shown in Case 144 at 19.3 years. Mr. Chapman said that the growth of bone only occurred where there was need for it. But in his (the speaker's) case that mandible—which was in functional occlusion with the maxilla at the age of 13—had outgrown the upper jaw six years later, at the age of 19, and the cheek teeth in the upper jaw were in lingual occlusion in consequence; the growth of bone had not occurred because there was need for it to grow, but had gone on growing for some other reason.

Then, again, Mr. Chapman had stated that these cases ought to be started upon still earlier than 8. He (the speaker) had simply tried to lay down some broad lines of guidance so that in the schools and elsewhere it might be taught that the average best age of treating cases was 8 years, and that teaching should be modified accordingly. He thought that the desirable age to treat cases was 8 years. Mr. Chapman had suggested that a start could not be made too early if the patients could be got sufficiently interested, and so on, and if it was a practical proposition. But the practical difficulty in the way of starting a case at 6 years old was that one would thereby lengthen the period of retention. By starting at the age of 8 instead of 6, the period of retention was reduced by, roughly two years, in his opinion, and yet a start was made early enough to stimulate bone growth.

Mr. Rushton had suggested that it was a desirable thing to have left his case 303 until an age when the teeth obviously had to be extracted. But Mr. Rushton did not see the models in occlusion on the screen, otherwise he would have seen that the central incisors were projecting over the lower lip, and also the irregularity of the whole arch. No extraction would ever put those incisors in their correct position. The case had to be mechanically corrected; it was too ugly to be left as it was.

In reply to Mr. Maxwell Stephens, he did not know what happened to the third molars in many cases. In his case 144 the third molars were just erupting, and apparently the jaw had gone on growing sufficiently for these teeth to come in their proper position. He had had cases, on the other hand, in which the third molars had been crowded out of the arches, and he had removed them. In fact, he removed a great many third molars—not orthodontic cases at all. The risk of functionless teeth becoming septic was very great.

Mr. Highton wanted to know how the pre-normal case was treated at 2 years and 11 months. He thought it was treated by the aid of mechanical toys mostly! The child used to be given a clockwork mouse very nearly every time she came to see him. At the first visit he was fortunate enough to be able to put screw bands on the *[d's]* and insert an upper arch to which he could lace the four incisors, and all he could do at subsequent visits was to screw up the nuts on the arch. Thereby he pushed out the incisors over the arch, and natural retention took place. His idea was that the teeth being in normal occlusion, the jaw was functioning quite naturally, and there was no undue stress. He had always thought that in many Class III cases one could notice the case getting worse and worse simply because of the thrust of the jaw in mastication, and he was sure that if the jaw occluded early enough there was not the same tendency to the protrusion of the lower jaw. He did not think these Class III cases always due to overstimulation from the pituitary, and causes of that kind; some of them might be due to acromegaly and so on, but many were not.

Then, of course, there were means of treatment other than mechanical to be used as the President had suggested. He believed the ideal age for orthodontic mechanical treatment to be 8 years, but he considered it his duty as a dental surgeon to instruct any parents who brought their children to see him in the whole art of looking after their children's mouths. He gave them a talk on the necessity of making the jaws function properly, on seeing

that the children were fed properly, on the undesirability of giving the children sweets at night or of giving them too soft food. He spoke to them on the necessity of stimulating the growth of the jaws by eating hard foods. He questioned them also about mouth-breathing. All these things were gone into as part of his function as a family practitioner, and it was not this kind of treatment that he was referring to at all when he laid down the age of 8 years. Parents were always asking at what time they should bring their children to him, and his reply was, "As soon as you can persuade them to come," and he added, "It is absolutely essential that your child should come and see me at 3 years of age." Dental surgeons should try to train the parents in their practice to give the children the best chance according to their lights.

REPORT OF CASES SHOWN BY MOVING PICTURE FILM*

BY DR. ADELBERT FERNALD, BOSTON, MASS.

ORTHODONTIA cases by moving pictures is something entirely new with me; I have just begun. My idea is to film a few difficult cases from beginning to end, the oftener the better. Many patients object to having a movie camera show the condition of their teeth. Others wish to have a mask put over their face. That is objectionable because it cuts away a part of the facial expression, which is what I would like to show. The principal object of these motion pictures is to try to show the changes made in the facial expression. There are many advantages in the use of lantern slides. You can focus every case, while with a movie film going at the rate of sixty feet a minute, before you are able to get a good focus of a certain thing it has gone by and something else comes into view. On the other hand, you can get some idea with a moving film about the expression which you could not see so well in a lantern slide.

These photographs were taken in my office under unfavorable conditions. When films are made by experts in their studios, with expert movie stars, only 50 per cent of the films are fit to use, so that when a camera man tries to make a picture of something he knows nothing about, and I know nothing about the movie end of it, we have a hard combination.

I will show you every film I have taken, good and bad, and if any of them interest you I will feel repaid for the time and expense I have put into this work.† As I have said, it is just an experiment. The lantern slides in many respects are much better, and I probably shall go back to them, but not until I have given this method a thorough trial.

*Read before the American Society of Orthodontists, Atlantic City, N. J., April 27-30, 1921.

†Motion pictures were shown illustrating 12 cases.—Editor.

CASE REPORT*

By J. A. BURRILL, D.D.S., CHICAGO, ILL.

AS a part of the symposium on Class II malocclusions I am showing two cases of Class II, Division 1, so identical from the dental viewpoint that it is hardly possible to tell the two cases apart, yet they are very different facial types.

Fig. 1 shows the original condition of the patient at the age of eleven years and two months in August, 1915. This case was treated in the ordinary manner, without any attempt to get root movement, using plain labial ex-

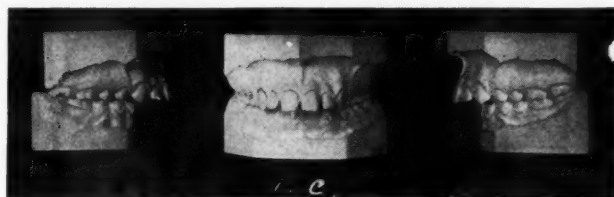


Fig. 1.

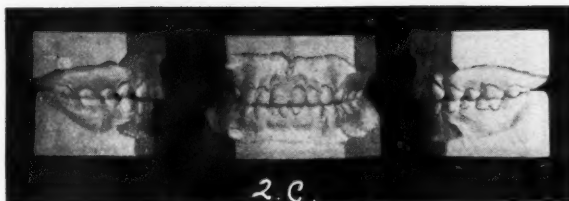


Fig. 2.



Fig. 3.

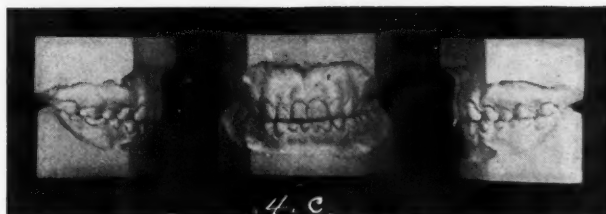


Fig. 4.

pansion wire on the maxillary arch and lingual wire on the mandibular arch with intermaxillary rubbers. Case was retained in June, 1916, with mesio-distal relation corrected and the crowns of the teeth apparently in their normal relations. February 6, 1918, all retaining appliances were removed and the case was watched periodically until November, 1918.

Fig. 2 shows what had developed. The antero relation had partially

*Read before the American Society of Orthodontists, Atlantic City, N. J., April 26-30, 1921.

held, but the overbite was too long, with a slight tendency to protrusion and crowding of the maxillary incisors as shown in Fig. 3. Angle Arch pin and tube appliance was adjusted for root movement of canines and incisors.

Fig. 4 shows the result of the root movement as accomplished in Novem-



Fig. 5.



Fig. 6.

ber, 1919, when all appliances were removed. Note the prominence of the roots of the maxillary incisors in this slide. Mandibular arch was not treated during second treatment.

Fig. 5 shows patient's face in the beginning of the treatment and in May, 1920, after all appliances had been off six months.

Fig. 6 shows the patient's face at the present time.

Fig. 7 shows the occlusal views of the models made in the beginning of first treatment, 1915, and second treatment, 1918, and the final condition, April, 1921.

It is impossible for me to state with any accuracy whether the change in the mesiodistal relation in this case was accomplished by a change in the temporomandibular articulation or an anterior movement of the mandibular

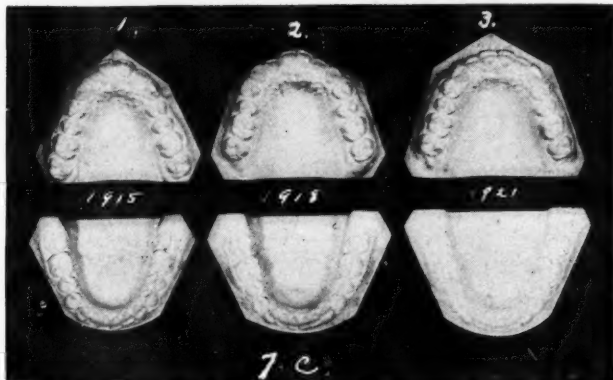


Fig. 7.

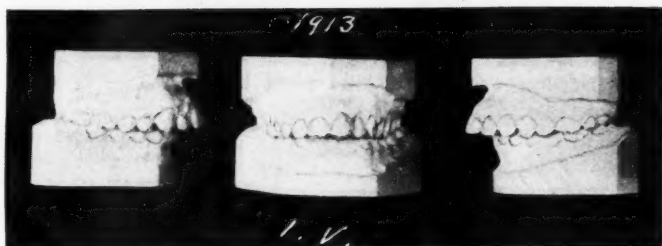


Fig. 8.

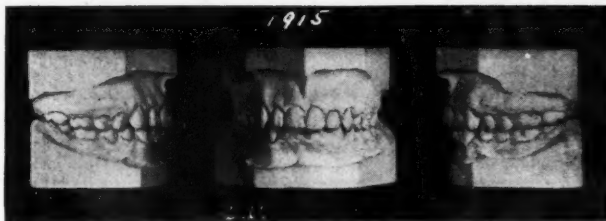


Fig. 9.

teeth and the posterior movement of the maxillary teeth within the jaw. I am inclined to believe, however, that the latter is what happened, as I had no difficulty in maintaining the anteroposterior relation after I had accomplished the root movement of the maxillary canines and incisors.

CASE II.—Fig. 8 shows models of a case, age thirteen years and nine months, in October, 1913, so near like the previous one that you are almost unable to distinguish them. This case was treated with anchor bands on first molars and bands with Angle tubes on canines, (maxillary and mandibular); .030 arches



Fig. 10.

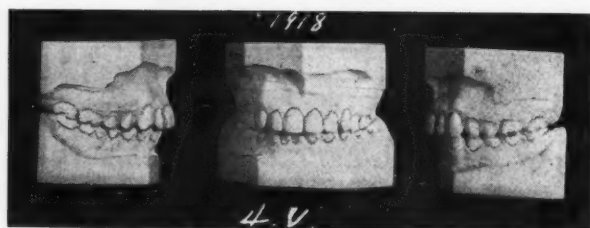


Fig. 11.

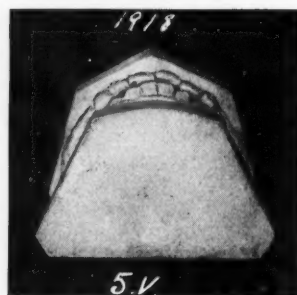


Fig. 12.

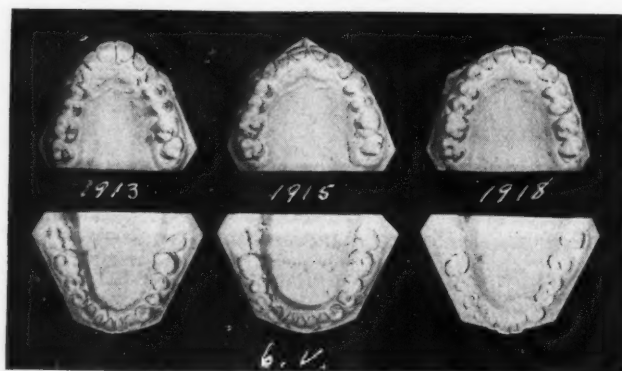


Fig. 13.

were used with Angle pins fitting the tube on each canine band, thus attaining root movement in the canines only. Intermaxillary elastics were used. Retainers were worn for one year and three months and all appliances removed in September, 1915, with the result as shown in Fig. 9.

Fig. 10 shows the patient's face at the beginning and in September, 1915. The case at this time seemed to be almost perfect, but on examination in June, 1918, showed the result as in Fig. 11. Note that the anteroposterior relation has held on the right side, but slipped on the left. Note also the lack of fullness in the incisor root region similar to the former case before root movement was accomplished.

Fig. 12 is an attempt to show the incisal occlusion at this time. When this case presented in this condition I was under the impression that the cause of the shifting of the anteroposterior relation on the left side was that the patient did his chewing entirely on the right side.

Fig. 13 shows the occlusal views of the teeth at the aforementioned dates. Here again I am unable to state where the anteroposterior change has taken place, and I am sorry not to be able to show this case at the present time. My plans to obtain later models and photos were frustrated by the patient not showing up when requested, but the case has remained almost identical with the condition in the picture of 1915 and the model of 1918. This case while not an entire failure has been improved wonderfully in the facial contour and I believe had I the opportunity to get the root movement as accomplished in the former that I could maintain the anteroposterior relation on the left side also, as I believe that the tendency to return to Class II subdivision, was brought about by the improper relation of the incisor teeth.

A SOLDERING STAND*

BY ERNEST N. BACH, A.B., D.D.S., TOLEDO, OHIO

THE soldering stand illustrated here was originally intended for orthodontists, although by the addition of a charcoal block or asbestos cup, it makes a convenient soldering stand for the general practice.

When making appliances by the indirect method, various difficulties are encountered, such as the instability of the model when adapting the lingual wire, or soldering on the buccal tubes, etc., as well as the breaking off of the banded teeth. This little device is designed to overcome these obstacles as much as possible, and yet itself being very simple. The soldering stand as originally given at the clinic consisted of a heavy cast iron base, (Fig 1, *a*) about 4½" in diameter, and ¾" thick. Into this was loosely seated the base of a ball joint, and prevented from rotating by a set screw (*D*). The table (*C*), upon which

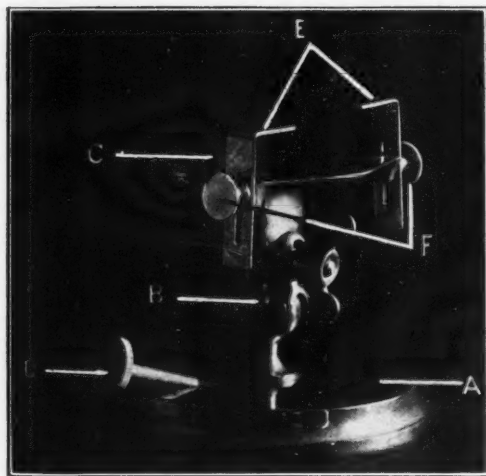


Fig. 1.—The original soldering stand.

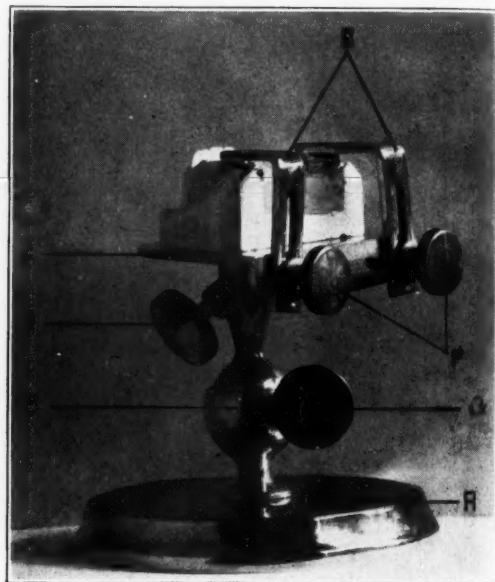


Fig. 2.—The new soldering stand. Parts cast of bronze with exception of base.

the model is placed and held, is rigidly attached to the upper half of the ball joint. The model is held there by the two adjustable clamps (*E*) which clamp the model from the sides and in turn are held or secured by the screws (*F*). The clamps are placed tightly on the molars, thus preventing them from breaking off when soldering appliances to the bands. They also hold the model to the table.

This device gives a freedom of movement in any direction. The table can

*Clinic given before the American Society of Orthodontists, and the Dewey Alumni Society, Atlantic City, N. J., April 26-30, 1921.

be tilted to any angle up to 45° , and held there by tightening the thumb screw (*G*) on the ball joint, but cannot be rotated easily.

During the clinic, suggestive changes were received and used in making the new stand with the result shown in Fig. 2.

THE NEW SOLDERING STAND

The same size and kind of base is used as in Fig. 1. The table is pivoted above the ball joint which allows the model, when clamped to the table, to be rotated while set at any angle without moving the whole base. The set screws to prevent rotation of the table, are placed directly below the same (Fig. 2, *d*). The clamps (Fig. 2, *e*) are heavier and narrower than those of Fig. 1, *e*, and placed at the back instead of the side of the table as shown in Fig. 1, but slotted the same in both cases. There is an additional slotting of the back of the table which allows the clamps to be moved horizontally as well as vertically. This provides for various widths between molars as well as various thicknesses of models, when adjusting the clamps.

The narrow clamps expose both buccal and lingual surfaces of the bands for soldering, and are held securely by the thumb screws (*F*). The ball joint allows a 90° swing and can be tightened by the thumb screw (*G*), although this is usually set fairly snug and seldom touched. The whole apparatus is heavy enough to stand quite a side push without moving, and the base is covered with felt, which allows the stand to be used on a porcelain or glass top cabinet without scratching.

APPLIANCES*

BY J. E. TAYLOR, D.D.S., HOLLYWOOD, CALIF.

IN presenting to you the subject of appliances it first becomes necessary to touch at least superficially upon the physiologic and biological problems with which we have to deal, that the problems confronting us are primarily developmental and secondarily a tooth problem is evident to anyone who observes and follows the trend of modern thought on this subject. An intelligent discussion of the faults and virtues of the appliances of today or of the future is impossible unless we take into consideration all the broader aspects of the phenomena with which we have to deal. Until recently the mechanical procedure almost exclusively dominated the practice of orthodontia. The science became a system of mechanics for restoration of normal form with practically no consideration of the forces governing growth and development. Diligent inquiry into the etiology of malocclusion compels the recognition of the fundamental facts of biology and physiology. Considerations other than mechanical are becoming more and more predominant in the mind of the trained specialist of today. Form and function go hand in hand, fundamentally related. In the correction of malocclusion, our aim is the restoration to the normal form. It is then not inconsistent to demand that we accompany the process with normal function. All form is dependent upon and a result of function. Theoretically then, it is impossible to have perfect form without perfect function, and by function the writer means not only function of the teeth themselves and the muscles surrounding the parts, but the function of metabolism, and nutrition, including all the physiologic processes of life. Normal metabolism means health, growth and development, any disturbance of the metabolism reverses the process and our beautiful physiologic process becomes pathologic. Malocclusion in most cases means abnormal development of a part or parts and a resultant inharmonious whole. We must then undertake the restoration by a process of stimulation of cellular activity, always mindful of the physiologic facts governing growth. In this connection it is well to think of the teeth themselves as a part of your appliance, the teeth being simply a means to an end, a convenient attachment for a force which will stimulate growth. While great progress has been made no genius has as yet given us the ideal appliance, my conception of the ideal would be a very delicate apparatus which neither pushes nor pulls the teeth to normal position but one that *grows* them there. The writer has seen a badly impacted maxillary canine lying in a torsilingual position brought into normal position by an intelligent physiologic development of the surrounding parts. We must eliminate excessive mechanical stress and closely

*Read before the Alumni Society of the International School of Orthodontia, Kansas City, Mo., July 14, 1921.

follow the accepted doctrine that "The teeth shall not be moved more rapidly than the resorption of tissue on one side is compensated for by the construction of new tissue on its opposite side." I do not wish to be too critical but in the light of only a superficial knowledge of the forces governing growth, it seems to me that even the most modern appliances embody too much rigidity and too many bands. Every living thing is pliable and resilient, rigidity has no place in the scheme of growth. You will get a better conception of what I mean if you will get a mental picture of a ten-year-old boy attempting to functionate in a straight-jacket.

The ribbon arch as given to us by Angle was a great step forward and marked an epoch in the construction of appliances. The curvilinear sheath attached to the band is absolutely correct in principle. The lingual arch with its accessory springs as given to us by Mershon and Robinson was another marked advance. The writer believes in the efficiency of the Robinson and Mershon appliances, their cleanliness, lack of bands, ligatures, etc.; but he sees no necessity for the half-round tube and lug attachment to the molar. The enforced rigidity of this and similar attachments must seriously interfere with the nutrition and metabolism of the tissues surrounding the tooth. It is also apparent that any outward lateral movement of the molar when attached rigidly to the end of the lingual arch wire would cause the distal to move more buccally than the mesial, thereby throwing the distal cusps out of normal line. There should be a flexible arrangement of the attachment which permits rotation of the anchorage and not the tooth, something lingually to embody the principle of the curved tube of the Angle appliance. In this connection I offer for your consideration and criticism a lingual arch attachment using a round tube and lug instead of the half-round.

DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Edited By

Clarence O. Simpson, M.D., D.D.S., and Howard R. Raper, D.D.S.

SPEEDY TECHNIC OF ROENTGENOGRAPHING THE TEETH

By C. A. LE MASTER, D.D.S., ST. LOUIS, MO.

Professor of Roentgenology at the St. Louis University Dental Department

THERE are many conditions that confront the dental roentgenologist in which it is necessary to make roentgenograms of individuals who cannot hold still during the exposure, and the roentgenologist has been unable to obtain roentgenograms of diagnostic value for such patients. The following cases are in the above class: Children and patients of advanced age; those suffering from nervousness; patients who gag easily; those who cannot refrain from swallowing; those suffering from diseases which cause involuntary



Fig. 1.

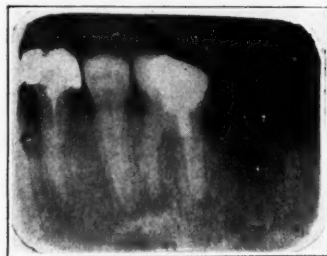


Fig. 2.

Fig. 1.—Mandibular molars; young boy seventeen years of age could not refrain from swallowing during the exposure. Exposure was made with one-fifteenth of a second time. Please note that the process surrounding the apex of distal root is diffused and the interradial area is also involved.

Fig. 2.—Maxillary first molar. Patient gagged and could not hold the film quietly in place in the mouth. Exposure was one-fifteenth of a second. Please note granulomas on all three roots with absorption of the apices.

motion of the head, hands, and body; finally, those who, from injury or sickness, have not sufficient strength to hold the dental film quietly in place. These are only some of the conditions encountered, and it is more important to obtain good diagnostic roentgenograms of the teeth of such individuals than of the average patient, as the condition of their teeth often plays an important part in the cause of their disease or of the patient's recovery.

To obtain roentgenograms without the blurring caused by motion is not possible with the regular technic for roentgenographing the teeth, as the ex-

posure is too long and the slightest motion of either the patient or the film will make the roentgenogram worthless; therefore it was necessary to obtain a method whereby the time of the exposure could be shortened. I have tried many methods to shorten the exposure, in one I used the duplitized film with two intensifying screens within the mouth; this was done by cutting down a duplitized film to the size of the Eastman dental film No. 2 using two small pieces of intensifying screens the same size and a cassette to accommodate these, made of two thin pieces of aluminum hinged at one end; placing the film and screens within the cassette and instructing the patient to bite upon it, the biting force causing the screens within the cassette to come in close apposition to the film. With this method I succeeded in shortening the time of exposure considerably, using 30 ma. (Milliamperage) with a penetration of 5 inches; however, the time of exposure was not short enough and the detail of the finished roentgenogram was not good due to the graininess caused by the screens. To obtain ideal results practically an instantaneous exposure must be made approximately from one-tenth to one-fifteenth a second exposure. This will eliminate blurring by motion. This I succeeded in doing



Fig. 3.



Fig. 4.

Fig. 3.—Maxillary, central and lateral incisors; patient extremely nervous and would not remain quiet. Exposure was made with one-fifteenth of a second time. The process surrounding the apex of the lateral incisor shows evidence of involvement.

Fig. 4.—Maxillary central incisor, patient was very nervous and would always turn head about time the exposure was to be made. It can be noted that the cone has cut off the edge of the roentgenogram but even with the patient in motion a diagnostic roentgenogram was obtained.

through the following experiment: I used a wet specimen as a subject; the speed type dental film; a 30 ma. Coolidge tube, standardizing on a four-inch penetration. Due to the fact that I intended to use a higher milliamperage than 30 it was necessary to use a very short exposure to safeguard the target of the tube, so I used one-tenth of a second exposure. The first exposure was as follows: 18-inch distance; 40 ma.; four-inch penetration with a result that I scarcely obtained an outline of the teeth on the film. I gradually increased the milliamperage to 50 ma., always keeping the penetration at 4 inches, when I obtained a fairly clear outline of the teeth on the film. I continued to increase the milliamperage until I obtained a roentgenogram clear in detail. The last exposure, which was ideal, was taken with the following technic: Distance 18 inches; film used, the speed dental film; penetration, 4 inch; milliamperage from 70 to 80 ma. I could not get the exact reading

of the milliamperage used as the exposure was too short, but I checked it up with a broad focus Coolidge tube with a longer exposure and the reading was 70 ma. This was not an accurate test as the tubes differ slightly and there might be a slight variation of the current, nevertheless it was close. I then marked the position of the Coolidge rheostat and auto-transformer so that I am always able to obtain approximately the same exposure each time.

A roentgenogram of the teeth taken with this technic will give ideal results with the patient in motion.

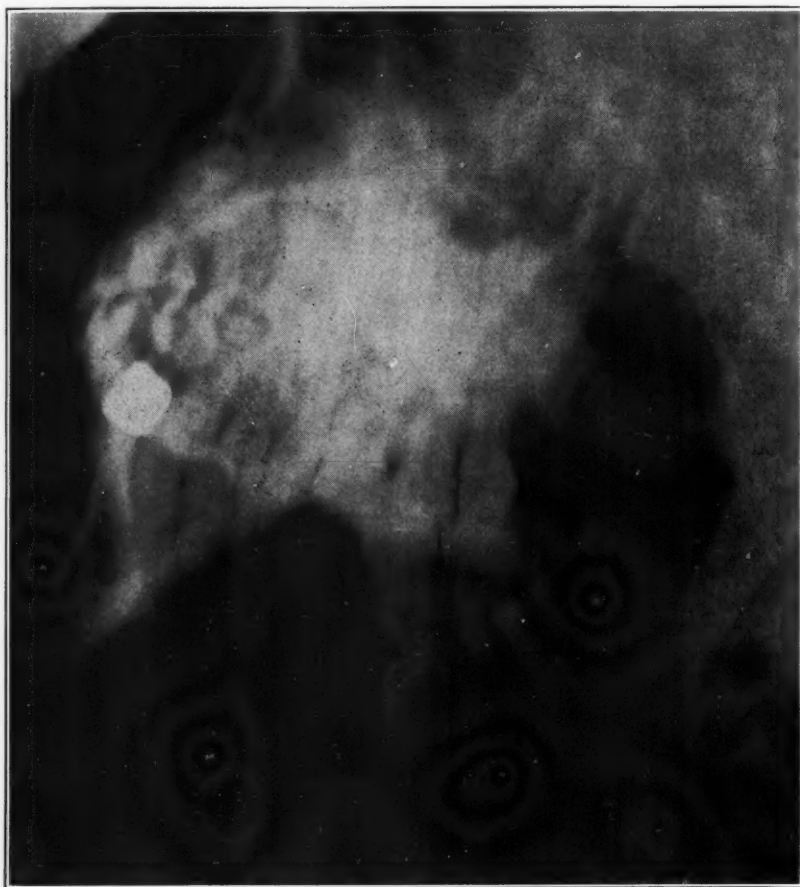


Fig. 5.—Extraoral roentgenogram of the mandible. This was taken with one-fifteenth of a second exposure, using duplitized film and double screens. It is often necessary to make the extraoral roentgenograms and this one is shown simply to illustrate the results with the speedy technic.

The question always asked is "How long will a tube of the 30 ma. type hold up under such use?" The target of my tube is not marred a bit and I have taken several hundred such roentgenograms in the past few months of patients needing this technic. I have speeded up the time of exposure, however, and am now using one-fifteenth of a second. I do not think that an exposure so short will injure a tube; and even though a tube would only hold up for a few hundred exposures, it would be well worth while for the service rendered the patient in roentgenograms of diagnostic value.

DENTAL FILM HOLDER*

BY F. B. SHELDON, FRESNO, CAL.

IN presenting this appliance I wish to state that it is not original with me, but I have been using it for the last year and find that I get very good results with it. Also it is easier for the patient than the old finger-holding method. Dr. J. DeVoine Guyot, in presenting his method in the August number of the *Journal of Radiology*, states that he is still using the old finger method for holding the film in the lower jaw. This appliance is equally good in either the upper or lower jaw.

The appliance consists of a small right-angle block of wood 2 c.e. wide and 2 c.e. high and $1\frac{1}{2}$ c.e. long. The shape of the block is shown in the illustrations. There is a slot, for the insertion of the side of the film, cut in

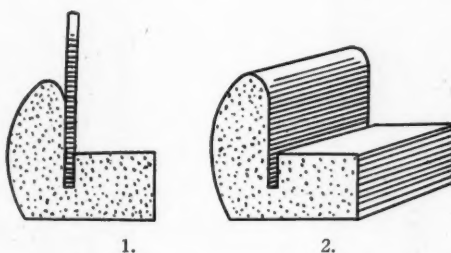


Fig. 1.—End view showing the film in place.
Fig. 2.—To show the slot across one side.

one side. The size of this slot will depend on whether the Buck or the Eastman film is used. The upper angle of the block which comes behind the film is made rounded so that the film in the roof of the mouth will not make a sharp angle but will better conform to the palate.

In using this holder the film is placed in the slot with the back to the vertical portion. The film is then placed in the patient's mouth, as usual, and the patient told to close his teeth on the horizontal part. This holds the film in position better than any other method that I have tried.

These blocks may be made up in a long strip and then cut to the desired length and in this way the cost need be but very little.

*Reprinted from the *Journal of Radiology*, November, 1921.

RADIODONTIC RIDDLES

Conducted by Clarence O. Simpson, M.D., D.D.S.

**A Department Devoted to Discussion of the Scientific, Technical, and Ethical Problems
of Radiodontia**

A Non-Surgical Removal

Q.—From these films, can you tell me whether the supernumerary tooth lies on the labial or lingual of the other teeth? I want to remove the tooth, but cannot locate it by digital examination. If the radiographs are not sufficient, tell me how to make others which will give me the necessary information for the operation.



Fig. 1.



Fig. 2.

A.—If a film is placed to extend from the lateral incisor to the first molar, and the central rays are directed parallel to the mesial surface of the first premolar, the imaginary supernumerary will be removed. The mistake was the result of directing the rays at such an angle to the teeth and film, that the image of the first premolar was distorted, and the lingual cusp superimposed on the canine.

The two films show too nearly the same aspect to eliminate the factor of error, and the following suggestions may help you to avoid similar mistakes. Sometimes, it may be desirable to verify findings from the same aspect, but usually more information is obtained from a different viewpoint. Therefore, if the second exposure was made before seeing the results of the first, there should have been a marked difference in the relative position of the tube to get the most value from the two exposures. If from the first exposure an abnormality was suspected in the region of the canine or first premolar, the logical course would have been to get a direct view of this region, instead of again "aiming" at the lateral incisor.

Although careful technic minimizes the distortion of images, it cannot be entirely prevented when films of standard size are used for the anterior teeth, because of the curve in the dental arch. Superimposed teeth, and any

part of a negative which is indistinct from bending of the film or other causes, should be ignored as evidence. The radiographic examination of all areas should be sufficiently thorough to exclude the possibility of misinterpretation through technical errors.

A Three-Inch Capacity Unsatisfactory

Q.—Please give me some advice in the purchase of an x-ray machine for use in my dental practice. Do you recommend a 3-inch, or a 5-inch spark gap? The 3-inch machine seems easier to manipulate, but I also want one which is entirely safe for the patient.

A.—Knowing that you want radiographic equipment for efficient service, not merely to impress your patients, I should unquestionably recommend a machine with a 5-inch spark gap. Transformers with a capacity limited to a 3-inch spark do not give sufficient voltage to produce the best results. To use them, either the tube is placed too near the patient, the exposure is excessively prolonged, "extra fast" films are used, or a combination of these expedients is employed.

Placing the tube too near patients increases the danger of dermatitis by exposing them to more "soft" radiation per milliamperere second, and distorts the image recorded on the negative. Prolonged exposures increase the skin dose, and when this is necessitated by a lack of penetration due to low voltage, the risk is proportionately greater. The highly sensitive emulsion on the "extra fast" films is granular to a degree that it impairs the definition of the negative, and has a restricted exposure latitude. Exposure latitude is the limit of underexposure and overexposure which will produce a usable negative.

A "back up," or spark gap of 4 inches to 4½ inches, is generally considered correct for intraoral films. There have been some advocates of a "soft tube" technic, who claimed exceptional results with a 2½- to 3-inch "back up." Doubtless, this vogue had its origin in the attraction of strong contrast in negatives, but contrast should not be attempted at the expense of detail. For diagnostic purposes, radiodontic negatives should clearly disclose the cancelli of the bone, and the roots and canals of the teeth.

No apparatus, which generates x-rays, is "entirely safe" for the patient. There is less danger of serious electric shock from 3-inch machines, but more danger from x-ray burns. The estimated voltage required to jump 3 inches of atmosphere is 40,000 volts, while 5 inches requires 60,000 volts. The injurious effect on the skin is proportionately greater, to produce negatives of similar density with a 3-inch spark gap, than with a higher voltage. Advertisements claiming safety for x-ray equipment are misleading, and for the protection of the innocent or ignorant, should be suppressed. The only basis for the claim is some manner of guarding the high tension current from the patient. The only protection against the danger of x-ray exposure is the careful application based upon a knowledge of the factors in dosage and an intelligent respect for it.

The Trials of the Younger Brother

Q.—I am the only dentist in town using radiography, and it is showing many bad results from the operations of the two other dentists, who have practiced here for almost twenty years. They have not been very friendly to me, and try to make a joke of my x-ray machine. I do not want to make matters worse by criticizing their work, but what can I do about it?

A.—Your position is unpleasant but courage and diplomacy will help you more than sympathy. It is only human for the older men to view your intrusion in their "sacred" field with ill-concealed antagonism. It is a peril which has haunted them in nightmares, but was never expected to appear in reality—with an x-ray machine. When this is fed by "small town" prejudice and gossip, only a philosopher, or a fool, could accept it amiably. You are much more of a blessing than a curse, for you will force them to do what they should have done without you—modernize.

Regarding the special problem of your attitude toward former patients of other dentists, your duty is clear. The obligation of a dentist or physician to his patients takes precedence over all others. When you find conditions, which for the welfare of the patient, should be corrected, let nothing deter you from the proper recommendations. Do not stifle your conscience and dishonor your profession to ingratiate yourself.

However, there is a marked difference between professional advice and unprofessional criticism, and there is no better test of ethical motives than the manner of discussing the operations of other men. Written codes can only restrict gross infractions, ethical principles are inherent and require no regulations. Often it is unnecessary to describe existing conditions, in advising the proper procedure. If conditions are evident, or the patient insists upon knowing them, you should not collaborate in an attempt to indict a former operator. Remember that x-ray examinations were not generally utilized until recent years, and all kinds of malpractice has been advocated at times, even some theories exploited at present are decidedly questionable. Extend a little more charity than you desire from your fellow-men.

Ignorance, misfortune, and incompetency should always be condoned. When you encounter unmistakable evidence of dishonesty, lies, and criminal negligence, if you still desire to protect the culprit at any cost, you should apply for advice to some one who is more of a Christian than the writer. A dentist, who mistreats a patient to obtain a fee, lies to avoid admitting his mistakes, and deliberately exposes patients to disease, is imposing too much upon professional courtesy and deserves to be condemned.

Your x-ray machine will prove to be a *joker*, instead of a *joke*, and soon cause your competitors more chagrin than amusement. Ridicule is a weak argument, and usually resorted to from the lack of any other. In this case, do not be influenced by it, because you are pursuing the right course to give your patients modern service and to win the confidence and patronage of the community.

ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

The Care of the Teeth. Public Health Reports, November 18, 1921.

While the article is elementary in content, it contains matter of general interest. The splendid teeth and "reinforced" alveoli of the Esquimaux appear to be due entirely to the use he makes of them not only for eating but as a handy tool for routine work. While the baby at birth is commonly spoken of as toothless, his gums contain not only preexistent milk teeth, but the germs of the permanent teeth. The six year molar is the most important tooth in the head and the most neglected. One may learn much about the proper use of the toothbrush by smearing the nails with clay or vaseline, and then removing this artificial coating with the brush. The keynote of cleansing the teeth, aside from keeping away germ life, is that every accessible surface should be polished.

Under pyorrhea it is stated that accumulation of tartar where teeth and gums join is a contributing cause but cannot produce the condition alone. Other substances can produce irritation and infection of the gums. There is no specific and the only treatment is to remove all of the foreign matter and then polish the exposed portions of the teeth. All depends on systematic co-operation of dentist and patient with quarterly consultations.

Under focal infection the x-ray plate must be the criterion and it will reveal the occurrence of pus collections and pockets filled with putrid detritus which are a menace to health. It does not follow that these are the sole cause of rheumatism or even perhaps the only factor in a given case, but they are certainly a common factor both in certain diseases and in the ill health of the individual.

Preventive Dentistry from a Slightly Different Point of View. H. E. Friesel, Pittsburg. The Dental Summary, November, 1921, xli, 11.

The author discusses the prevention of dental focal infection. In proceeding chronologically, the grinding surfaces are naturally immune to caries unless there are defects in the enamel—pits and fissures—through which micro-organisms can penetrate. The cavities here form beneath the enamel and the orifice is smaller than the cavity. These are the lesions which first demand

attention. But little excavation is necessary and after proper filling with amalgam or cement there is not much likelihood of recurrence. Next for consideration is the spreading caries of the septal surfaces which is a slow process. Third is the form which attacks the buccal and labial surfaces of the teeth, which is also a form of spreading decay of slow evolution. A fourth form known as senile decay is seen principally in the elderly. These varieties of caries may constitute as many different stages in some subjects. In regard to preventive dentistry in the interest of lessening focal infection and disease secondary thereto, there is usually time to treat pit and fissure cavities and prevent the later developing forms. In addition to proper treatment of caries tooth restoration is an important factor in preventive dentistry, the form and contours of the restored teeth being made to harmonize with those of the gums. Since the introduction of the theory and practice of focal disinfection, the work of the dentist has greatly augmented and its prestige and status have correspondingly improved. Since the dentist has therefore approximated the full status of a surgical specialist it behooves him to consider the preventive end of his specialty; for he no longer seeks to prevent decay in the mere interest of the teeth and digestion but in the prophylaxis of a vast amount of preventable disease.

Bacterial Invasion of Dental Tissues. H. W. C. Bodecker, Berlin. The Journal of the National Dental Association, November, 1921, viii, 11.

The author in his summary of the above article states that it is impossible for the mouth acid formed by fermentation of food to acquire the necessary concentration for decalcification of the teeth already carious let alone sound teeth. To account for caries due to acidity the acid must be formed *in situ* by microorganisms. For the latter to grow a mixed nutrient medium is necessary—one containing both carbohydrates and protein. The former are formed from the food by salivary digestion. The microorganisms of the mouth have no proper motion and advance by ordinary proliferation; and the richer the medium the more rapid the advance. The organisms do not invade the teeth at haphazard but along definite lines, the tissues attacked being the non-calcified organic matter which is rich in albumin. Caries is in all probability a local infectious process. Despite its typical forms no two cases of carious teeth are exactly similar, or at least it would be mathematically possible to have from three to four million combinations.

Removal of Tonsils and Teeth for the Cure of Rheumatism. Editorial, Journal of the Indiana State Medical Association, November 15, 1921, xvi, 11.

Statistics of the Metropolitan Life Insurance Company show that there has been a marked decline in the mortality of rheumatism during the past ten years. This is explained by clinicians as the natural outcome of the present custom of extirpating foci of infection in the teeth and tonsils. The editor does not antagonize this explanation, although he insists that in the absence of an exact diagnosis there is much wasted effort in connection with the ablation of tonsils and extraction of teeth which have never been a menace

to health and life. A chance is given for untrained and perhaps also for unscrupulous practitioners to do something final for the relief of their patients (the editor does not question the good faith of these men although it is evident that the fee for a tonsillectomy may furnish a subconscious if not a conscious motive for intervention). The dentist who pulls sound teeth in the hope of removing a focus of infection most frequently acts to please the medical man who sends the patient to him; it would of course be awkward to refuse when the physician insisted and when in addition the radiogram backs up the indication. In regard to the tonsils, if these are large they may be free from infection while conversely relatively small ones may be infected. The tendency of the day is to make both dental extraction and tonsillar extirpation regular surgical procedures performed under anesthesia and finished by suture; the editor does not comment on this fact but naturally such an attitude makes a correct diagnosis doubly important. The "surgical extraction" of a sound tooth seems unthinkable.

Etiological Relation of Focal Infections to Remote Diseases. T. B. Hartzell, Minneapolis. The Journal of the National Dental Association, September, 1921, viii, 9.

The author illustrates the possibility of wrong diagnosis, citing the case of a woman thought to suffer from muscular and articular rheumatism by her physician, who sent her to him. He found some pulpless teeth but the disease picture was not entirely clear and a blood count showed 38 per cent of eosinophiles which led to a research for parasites. Another case was found in the family of the same blood state. The stools being negative as far as intestinal flora were concerned the history of rare pork consumption made the diagnosis of trichinosis. The constitutional infection may have been a mixture of the latter with streptococcic infection. Upon removing the pathological teeth the patient recovered but was not free from symptoms for six months, suggesting that the pork worm was largely responsible for the illness. In another case of presumable streptococcic infection from pyorrhea the blood count and follow up of the case showed the presence of pernicious anemia. Death occurred in less than 4 weeks from consultation. In another patient from whom infected teeth had been removed developed an exacerbation of tuberculosis apparently lighted up by the operation or narcosis. In still another patient what was at first regarded as simple rheumatism from dental infection proved to be gonorrheal rheumatism and the extraction of the teeth is of course without benefit in such cases. Dr. Hartzell cites a number of other interesting cases of mistaken diagnosis of dental infection.

Focal Infection with Especial Reference to the Tonsil. J. H. Hester, Louisville. American Journal of Surgery, November, 1921, xxxv, 11.

In the research for foci of infection the general practitioner is poorly qualified; for if he begins to look for such a focus he must investigate the entire body of his patient. Experience shows that in removing tonsils and teeth other foci are often left behind; so that while some improvement may

follow these partial removals the patient cannot make a complete recovery. Hence under ideal conditions subjects with suspicion of foci should consult a group of diagnosticians such as may be found in the largest cities. The expense of the trip, however, is often prohibitive. The practitioner in the smaller locality must therefore obtain such cooperation as he can from the nose and throat specialist, laboratory man, x-ray diagnostician, dentist, internist, neurologist, etc., of his own neighborhood. The laboratory man may furnish information concerning the nature and virulence of the microorganism at fault, and the author lays much stress on this point. The nose and throat specialist is in position to make a clinical diagnosis of the character and degree of tonsillar infection, and if these organs are infected they should come out without waiting for a special indication; for not only do they menace the otherwise sound man but they are a handicap to the invalid. The author relates a case of recovery of health following tonsillectomy in a case in which the diagnosis had been acute miliary tuberculosis; and apparently subjects with diagnosis of tuberculosis of the ordinary species may benefit strikingly from the same intervention. The type of case mentioned appears to be what the French term pseudotuberculosis from disease of the upper air and food passages; many having been rejected as soldiers in the late war under the impression that they were actively tuberculous.

Technic of Reimplantation. M. Ludwig (Bautzen). *Zahnaerztliche Rundschau*, August 9, 1921, xxx, 32.

The author believes that this ancient art is being rehabilitated as a regular resource in conservative dentistry after a period in which its use was restricted to accidental emergencies. The technic is so nearly perfect that in-succes is rare. The possibility of reimplantation under all possible conditions should not be lost sight of. In addition to loss of a tooth from a fall or blow, the author recommends it in a marked periostitis of the molar teeth. If the loss of a tooth is the dentist's fault the tooth will of course be reimplanted immediately. Mamlock also recommends the act in pyorrhea alveolaris, but the author has had no experience here, and does not understand why wiring, etc., would not answer equally well. Nor does periostitis in premolars and front teeth appear to indicate implantation. The strictest asepsis is indicated despite the fact that implantation of dirty teeth after accidents has often succeeded perfectly. Conduction anesthesia is indicated with every possible effort not to injure the alveolus, in all cases where a tooth is to be extracted for subsequent implantation. Not to produce alteration of the alveolus is very difficult in certain cases where the shape of the molar, is unusual, as in widely spread roots. Much personal experience is a great advantage, but as a rule the tooth after preparation will glide back into its socket without trouble, there being a slight rotation. The author places the extracted tooth in normal saline infusion at 37° C. and packs the socket with iodoform gauze. The extracted tooth is now taken out of the solution, its crown wrapped in sterile mull and its roots treated, especially in periostitic cases when treatment should be very thorough including sealing the apex with gold amalgam. The tooth

is then replaced in its socket, and ligatured. The author last year reimplanted five teeth with great success, two having been the origin of a palatal fistula.

Cleft Palate and Harelip. W. H. G. Logan. *Journal of the National Dental Association*, November, 1921, viii, 11.

The author teaches that a child born with cleft of the hard palate and lip should be operated on as soon as it regains its birthweight and is making satisfactory physical progress from day to day. A pediatricist should attend to preoperative and postoperative care. In total cases the defect in the alveolar ridge and anterior third of the hard palate should be closed first (save when the defect is so great that closure would distort the nasal fossa of that side). The hair lip may be closed in from 4 to 8 weeks after the bone operation. If protruding premaxillary bones are present, they should never be excised but adapted to form an intrinsic part of the jaw—they contain the germs of the permanent incisors as well as those of the deciduous teeth. When the separate bones are in apposition the dense (?) surface should be removed. There should not be too much tension on the lead plates. In reforming a broadly spread nostril or lip there must be free undercutting in order to secure apposition without tension. In regard to technics the author recommends equisitene for the lip in place of horsehair and seals the line of incision on the labial aspect with liquid benzoin evaporated to a syrupy consistence. To the cheek and face should be applied the traction bow and tension straps of adhesive plaster or Canton flannel with celluloid and acetone solution.

Bone Phlegmon of Dental Origin. Jacques (Nancy) *Revue de laryngologie*, etc. Oct. 15, 1921, xlii, 19.

According to French exchanges a recent article by Sebileau has done much to clear up the obscurity of this subject. These lesions are known as perimandibular phlegmons, internal odontopathic phlegmons of the mandible, odontogenic osteoperiostitis of the same, etc. The latter is the proper term because pus does not always form. There may be a simple inflammation with resolution, or after some days pus may form and escape, invariably leaving a fistula. Jacques can add something to this picture—a less acute type which forms a pseudocyst. Clinically there is no resemblance to the ordinary acute forms, although there may be transitional conditions in which crises of suppuration occur. A number of case histories are given and the lesion is summed up as a flattened tumor, smooth and covered with normal mucosa applied closely to the bone and apparently continuous with it. While the acute forms are often spoken of as peculiar to the mandible, the present type, according to the author's material, is found on the superior maxillary, and on both aspects. Its progress is slow and insidious and it may be stationary for long periods. Fluctuation is simulated, but the introduction of the exploring needle brings nothing away. The lesion, however, is motivated by an apical infection of a very attenuated character. The diagnosis of these cases is difficult

because tuberculosis and syphilis can cause a similar manifestation, and so might fibroma of the periosteum, chondroma, osteoma, malignant disease and especially paradental cyst, the latter simulating the lesion very closely. Extraction of the offending tooth may make the diagnosis, because the lesion at once disappears after this act.

Some of the Present Problems of Operative Dentistry. C. N. Johnson, (Chicago). *The Dental Cosmos*, October, 1921, lxiii, 10.

The author first discusses prevention of caries. We are making progress here, although perhaps we can only visualize it by comparing the teeth of children with those of their parents, and by comparing the teeth of people who patronize the dentist habitually and those who do not. We know that early filling not only tends to preserve the filled teeth but it retards decay in the teeth still intact. Periodical scaling by the dentist and daily cleansing by the patient complete our resources for prevention of caries. In regard to prevention of pyorrhea there are scaling and the removal of spaces in which food can habitually lodge, as well as improving the occlusion of certain teeth. The third subject mentioned by the author is extraction vs. conservatism. The craze for promiscuous extraction is due largely to forced interpretation of certain x-ray shadows in the absence of any clinical evidence of apical abscess. It is best to tell all patients that this resource unaided should not doom to extraction an apparently intact tooth. It is not alone what appears on the plate but the tactless wording of the röntgenographers' reports which is responsible for much unnecessary extraction; because the language of the report, which the patient is usually allowed to see, often preys on his imagination, and makes him willing to sacrifice a tooth which the dentist himself might be willing to retain. The so-called surgical extraction of teeth with its curettage and suturing is somewhat of a meddlesome practice leaving the patient with a very sore mouth and lightened pocket book—for as a definite surgical operation the charge of \$25 is not excessive—and the strictly ethical dentists should discountenance the practice before it becomes widespread.

Danger Signals in Nitrous Oxide-Oxygen Anesthesia. E. R. Bier (Winnipeg). *Oral Health*, October 31, 1921, xi, 10.

In a city like Winnipeg less than half a dozen men are empowered to administer this anesthetic association, which is alike the safest and most dangerous according to conditions. Supposing that the anesthesia is going ahead under all the favorable conditions, the first danger signal may be in the quality of the respiration which may be very slight and superficial, hardly perceptible. Should this be the result of overdosage cyanosis will appear; whereupon the inhaler should at once be removed and oxygen given. If the breathing signifies that the anesthesia is wearing off the subject should show a deep pinkish hue and requires that the oxygen be shut off and more nitrous oxide given. If the subject is pale and sweating he requires oxygen with removal of the inhaler. Other danger signals have to do with blocking of the air passages, which may occur in theory under a variety of conditions, most of

which can be prevented. Should this accident occur the resulting paralysis of respiration must be antagonized in a variety of ways if necessary, including traction on the tongue, inversion, artificial respiration and perhaps tracheotomy.

The Ultraviolet Ray in Dentistry. Lt. Louis B. Lippman, U. S. N., Brooklyn. *American Journal of Electrotherapeutics and Radiology*, October, 1921, xxxix, 10.

The author who has used the Kromayer quartz lamp refers to the work of Daly of Tufts Dental, Mass., who has recently reported 40 cases of pyorrhea treated in this manner. Since April, 1921, this college has given a course of instruction in quartz lamp treatment. The latter was directed primarily against gingivitis and pyorrhea, upon the theory that by destroying the pathogenic bacteria the diseases in question should be arrested. Incidentally it was learned that other conditions were improved, as cellulitis following extraction, inflammation due to poorly fitting prosthesis, mercurial stomatitis, etc. The technic was very simple. After scaling the teeth the light application was begun with one minute exposures increased one minute daily for four days; after which five minute sessions were given daily. The author reports 4 of 14 cases, varying from incipient gingivitis to advanced pyorrhea. His conclusions from his personal experience are as follows: the light treatment, as outlined, is of value in certain oral conditions. It destroys Vincent's bacteria, and, in addition to its bactericidal properties, is a stimulant in the treatment of morbid gum conditions. The results obtained thus far were obtained more rapidly than under other methods now in use. The author adds that the remedy does not benefit all cases of pyorrhea, in which affection all measures sometimes fail.

Determination of Dental Focal Infections by Means of the Radiogram. M. J. Hubbeny, Chicago. *Journal of Radiology*, December, 1921, ii, 12.

Bone is the tissue which shows in the radiogram and there can be but four reactions to disease which show on the plate, viz., rarefaction and condensation, loss of substance and new formation. We may go as far as to state that whenever there has been destruction of bone around the tooth in question, that tooth should come out. In cases with decalcification about the apex we must bear in mind that such teeth often lead to infection, while in new formation and condensation the converse is true. The periapical rarefaction may show in the plate in several expressions and in all extraction is indicated. Even in a negative x-ray plate if there is suspicion of infection from a well-filled tooth the author would order it pulled; and despite the common experience of the harmlessness of some well-filled devitalized teeth he does not believe in saving them under any conditions. Nothing would be tolerated in any other structure that we tolerate in the teeth—the retention of dead tissue because it gives no trouble. The chief reason, however, is the fact that acute apical infection, which is always liable to develop in these teeth, does not show in the radiogram.

The International Journal of Orthodontia, Oral Surgery and Radiography

PUBLISHED THE FIFTEENTH OF EVERY MONTH BY

THE C. V. MOSBY CO., 801-809 Metropolitan Bldg., St. Louis, Mo.

Foreign Depots—*Great Britain*—Henry Kimpton, 263 High Holborn, London, W. C.; *Australasia*—Stirling & Co., 317 Collins Street, Modern Chambers, Melbourne; *India*—"Practical Medicine," Egerton Street, Delhi; *Porto Rico*—Pedro C. Timothee, Rafael Cordero 68, San Juan, P. R.

Subscription Rates.—Single copies, 75 cents. To anywhere in United States, Cuba, Porto Rico, Canal Zone, Mexico, Hawaii and Philippine Islands, \$6.00 per year in advance. Under foreign postage, \$6.40. Volume begins with January and ends with December of each year.

Remittances—Remittances for subscriptions should be made by check, draft, postoffice or express money order, or registered letter payable to the publishers, The C. V. Mosby Company.

Contributions—The editor will be pleased to consider the publication of original communications of merit on orthodontic and allied subjects, which must be contributed solely to this journal.

Opinions—Neither the editor nor the publisher hold themselves responsible for the opinions of contributors, nor are they responsible for other than editorial statements.

Reprints—Since it is not desirable to hold type standing longer than absolutely necessary, all requests for reprints should be made at time of submitting manuscript for publication. Rate card will be sent with galley proof.

Communications—Contributed articles, illustrations, letters, books for review, and all other matter pertaining to the editorial department should be addressed to the Editor, Doctor Martin Dewey, 501 Fifth Ave., New York City. All communications in regard to advertising, subscriptions, change of address, etc., should be addressed to the publishers, The C. V. Mosby Company, 801-809 Metropolitan Building, St. Louis, Mo.

Illustrations—Such halftones and zinc etchings as in the judgment of the editor are necessary to illustrate articles will be furnished when photographs or drawings are supplied by the authors of said articles.

Advertisements—Objectionable advertisements will not be accepted for publication in this journal. Forms close first of month preceding date of issue. Advertising rates and sizes on application.

Change of Address—The publishers should be advised of change of subscriber's address about fifteen days before date of issue with both new and old addresses given.

Nonreceipt of Copies—Complaints for nonreceipt of copies or requests for extra numbers must be received on or before the fifteenth of the month of publication; otherwise the supply is apt to be exhausted.

Entered at the Post Office at St. Louis, Mo., as Second-Class Matter.

EDITORIALS

The American Society of Dental Radiographers

THE American Society of Dental Radiographers held a meeting in the Drake Hotel, Chicago, on January 19 at which time the Constitution and By-laws were adopted. After considerable discussion it was decided to limit the membership to those who were members of the National Dental Association and engaged in the practice of radiography or actively interested in it.

The Constitution and By-laws provided for a Board of Directors composed of six men, two of whom would be elected every year to serve for three years. As no election for the Board of Directors could be held before the meeting in Los Angeles, Dr. McKittrick, President, was given authority by the Constitution and By-laws to appoint the Board of Directors to serve until the Los Angeles meeting: He appointed the following: Dr. J. H. Prothero, of Chicago, Ill.; Dr. B. Frank Gray, of San Francisco, Cal.; Dr. Wm. H. Thwaites, of Grand Rapids, Mich.; Dr. Clarence O. Simpson, of St. Louis,

Mo.; Dr. Arnott A. Moore, of Buffalo, N. Y.; Dr. Chas. F. Chandler, of Montgomery, Ala.

It was decided to hold the next meeting at the Ambassador Hotel, Los Angeles, beginning Wednesday, July 19. It was decided to leave the charter membership open until the Los Angeles meeting and the Secretary was instructed to notify all men who had made application for membership to that effect.

The membership fee also included a subscription to the official organ of publication of the Society of Dental Radiographers, the subscription of the Journal to begin January, 1923.

Dr. C. O. Simpson, of St. Louis, read a paper on the "Benefits to be Derived of an Organization of Dental Radiographers," and Dr. Martin Dewey read a paper on "Radiographic Interpretation of Bone Changes as Demonstrated by the Microscope and Microscopic Specimens." These papers will be published at an early date and a copy of the Journal will be sent to all the members of the American Society of Dental Radiographers who have taken up their charter membership by that time. It was voted by the members present to make *THE INTERNATIONAL JOURNAL OF ORTHODONTIA AND ORAL SURGERY* the official organ of the Society.

It is our belief that nothing has ever been done which will be of greater benefit to the profession than the organization of The American Society of Dental Radiographers.

The International Journal of Orthodontia, Oral Surgery and Radiography

At the organization meeting of the American Society of Dental Radiographers held in Chicago, January 19, *THE INTERNATIONAL JOURNAL OF ORTHODONTIA AND ORAL SURGERY* was made the official organ of the Society. In the future the Journal will be known as *THE INTERNATIONAL JOURNAL OF ORTHODONTIA, ORAL SURGERY AND RADIOGRAPHY*.

While the Department of Oral Radiography is not a new feature of the Journal, its value will be increased by the publication of the proceedings of the new Society.

We take this opportunity to extend our best wishes for the success of the American Society of Dental Radiographers.

ORTHODONTIC NEWS AND NOTES

The editors desire to make this department a permanent feature of the Journal, but in order to do so must have the full support of the orthodontic profession throughout the country. We would deem it a great favor if our subscribers and readers would send in such announcements as might be of interest to the profession.

National Dental Convention

The Twenty-Sixth Annual Convention of the National Dental Association will be held in Los Angeles, California, July 17 to 21, 1922.

The Ambassador, one of the city's newest and largest hotels, situated in the heart of one of the most beautiful residential districts, will be convention headquarters and practically all sessions can be held in the hotel or on the grounds.

The Local Committee on Arrangements can safely state that this meeting will provide an excellent program, demonstrating that "Dentistry can add ten years to the average of human life." This committee can also safely state that our visitors will be well entertained during their sojourn in Los Angeles.

It is none too early to plan a vacation westward in July, 1922, and to send for hotel reservations.

Watch for further and detailed announcements in all Dental Journals. The Local Committee on Arrangements, C. M. Benbrook, General Chairman, 707 Auditorium Bldg., Los Angeles, California.

Meeting of the American Society of Orthodontists

The next meeting of the American Society of Orthodontists will be held in Chicago, Illinois, at the Edgewater Beach Hotel on April 24, 25 and 26, 1922. A very interesting and instructive program has been arranged by the Board of Censors, consisting of Clinics, Case Reports and Papers of unusual merit. Reservation should be made early in order to secure the best accommodations.—Ralph Waldron, Sec.-Treas.

Alumni Society of the Dewey School of Orthodontia

The next annual meeting of this society will be held on April 27-28th at the Edgewater Beach Hotel, Chicago. The usual high standard of the meetings of this society will be maintained. All interested in orthodontia are cordially invited to attend these meetings. George F. Burke, Secretary, 741-43 David Whitney Bldg., Detroit, Michigan.

New York Society of Orthodontists

The second regular meeting of the New York Society of Orthodontists will be held at the Vanderbilt Hotel, Park Avenue and Thirty-fourth Street, Wednesday afternoon and evening, Feb. 8, 1922. The following programme will be carried out: 2:00 P.M. *Clinics*. "Indirect Method of Making Plain Bands." (Technic of L. M. Waugh). By W. C. Chapin. "Skeleton Wire Bite Plate." By S. Lewis Kregarman. "Band Technic." By Lourie J. Porter. "A Container for the Distribution of Intermaxillary Elastics." By Charles A. Spahn. 3:00 P.M. *Papers*. "Some Types of Finger Springs Used on the Lingual Base-Wire." By Martin Dewey. "A Consideration of Normal and Abnormal Dentures as a Problem of Three Dimensional Space and Its Bearing on Orthodontic Classification and Terminology." By Frederick L. Stanton. 5:30 P.M.: Business Session. 6:00 P.M.: Recess. 6:30 P.M.: Dinner. 8:00 P.M.: Essay. "The Influence of Certain Endocrine Glands upon Growth and Development." By Emil Goetsch, Brooklyn, N. Y.—William C. Fisher, Sec'y-Treas., 501 Fifth Ave., New York, N. Y.

The Scientific Section of Oral Surgery

The First District Dental Society of New York will meet Wednesday evening, Feb. 15, 1922, at eight thirty. This will be a joint meeting of the section of Laryngology and Rhinology at the New York Academy of Medicine.

Dr. M. N. Federspiel of Milwaukee will read a paper that evening entitled: "Treatment of Cleft Palate and Hare Lip," discussion will be by Samuel Lloyd, Robert H. Ivy, Philadelphia, Pa., Edward W. Peterson, James S. Green and John E. MacKenty.—Leo Winter, Secretary, 133 west 72d St.

Southern Society of Orthodontists

The next annual meeting of the Southern Society of Orthodontists will be held on March 14 and 15, 1922, at the Piedmont Hotel, Atlanta, Ga. An exceptionally good program has been outlined covering a scientific program including clinics and case reports. All interested in Orthodontia are cordially invited to these meetings.—Dr. C. C. Howard, President, 436 Peachtree Street, Atlanta, Ga. Dr. O. A. Oliver, Sec'y-Treas., 306 Lambuth Building, Nashville, Tenn.

Societe Francaise d'Orthopedie Dento-Faciale

The meeting of the Societe Francaise d'Orthopedie Dento-Faciale held in Paris in January was a great success. The Society, although recently organized, attracted members from Lyons, Bordeaux, Marseilles, Chambéry, Lausanne (Switzerland), Brussels (Belgium) and London. The scope of the meeting was almost international. The Society is planning to hold another meeting in Lyons in September, 1922.—Dr. James T. Quintero, Secretary.

Items of Interest

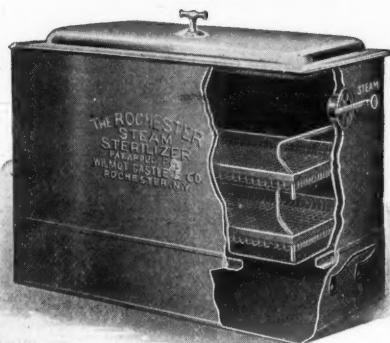
Dr. A. H. McKibben is now located in the Jenkins Arcade, Pittsburgh, Pa. Practice limited to orthodontia.

Dr. Raymond L. Webster announces the removal of his office to Churchill House, 155 Angell Street, Providence, Rhode Island. Practice limited to orthodontia.

Dr. C. O. Wells announces the removal of his office from room 402 to room 303 Andrews-Law Building, Spartanburg, S. C., for the exclusive practice of orthodontia.

Dr. D. Austin Sniffen announces the association with him of Dr. Franklin A. Squires who will limit his practice to orthodontia and Dr. Charles H. Stimpson to the general practice of dentistry, 20 Church Street, White Plains, N. Y.

Sterilize Points and Cotton with Steam



No. 110 Sterilizer for gas or electricity. Furnished in combination with Water or Instrument Sterilizers on practical treatment tables.



Rochester Sterilizer the Recognized Standard

ITS double walled construction and simple "hot air" and "steam" control valve insure efficiency and dry material after sterilizing.

Dr. J. R. Callahan called this the "steam chest" and recommended it for root canal operations.

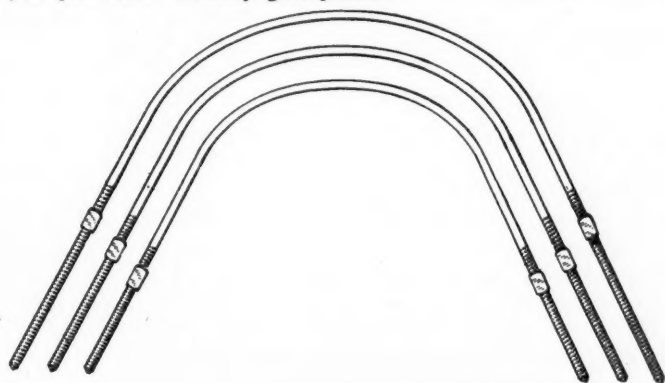
Write for catalogue

WILMOT CASTLE CO.
1150 University Avenue
ROCHESTER, N. Y., U. S. A.

CASTLE

DR. BRADY'S EXPANSION ARCHES

Are made from a highly elastic alloy, deliver their power gently and work a long time; little soreness; fewer visits needed. Nuts adjusted accurately—they stay right where you put 'em. Heavily gold-plated.



Two Gauges:

16 Gauge
18 Gauge

Three Lengths:

Large, 5 inch
Medium, 4½ inch
Small, 4 inch

Three Patterns:

Regular, (plain)
With Hooks,
Full threaded

PRICES:

Regular Pattern, either gauge, any length, each.....\$1.00
With retraction hooks, either gauge, any length, each..... 1.50
Threaded entire length, either gauge, any length, each..... 2.00

WE ALSO MAKE CONTOURED CLAMP BANDS, THAT FIT

ANY DEALER CAN GET THESE FOR YOU

BRADY MAN'F'G CO., 3103 Troost Ave., Kansas City, Mo.

International Journal of Orthodontia, Oral Surgery and Radiography

A Monthly Journal Devoted to the Science of Orthodontia, Including
Surgical Orthodontia, Oral Surgery, and Dental and Oral Radiography

REPRESENTING

- | | |
|--|--|
| American Society of Orthodontists. | Alumni Society of the International School of Orthodontia. |
| Pacific Coast Society of Orthodontists. | European Society of Orthodontia. |
| Southwestern Society of Orthodontists. | British Society for the Study of Orthodontics. |
| Southern Society of Orthodontists. | Société Française d'Orthopédie Dentofaciale. |
| Rocky Mountain Society of Orthodontists. | |
| Alumni Society of the Dewey School of Orthodontia. | |
- American Society of Dental Radiographers

EDITORIAL STAFF—Orthodontia

MARTIN DEWEY, M.D., D.D.S., New York, *Editor*
H. C. Pollock, D.D.S., St. Louis, *Associate Editor*

Oral Surgery

M. N. Federspiel, D.D.S., M.D., Milwaukee.	Jos. D. Eby, D.D.S., New York.
Vilray P. Blair, M.D., F.A.C.S., St. Louis.	Leroy M. S. Miner, D. M. D., M.D., Boston.
William Carr, M.D., D.D.S., New York.	Wm. L. Shearer, M.D., D.D.S., Omaha, Nebr.
Frederick F. Molt, D.D.S., Chicago.	Robert H. Ivy, M.D., D.D.S., Philadelphia.

Dental and Oral Radiography

Clarence O. Simpson, M.D., D.D.S., St. Louis.	Howard R. Raper, D.D.S., Indianapolis.
---	--

All business communications should be addressed to the Publishers: C. V. Mosby Co., St. Louis.
(See page 178 for further information.)

CONTENTS FOR MARCH, 1922

Original Articles

- | | |
|--|-----|
| Early Treatment of Malocclusion. By E. A. Bogue, M.D., New York..... | 119 |
| Studies on the Etiology of Angle's Class II Malocclusal Manifestations. By Milo Hellman, D.D.S., New York City | 129 |
| Report of the Educational Committee.—Outline of Material for Undergraduate Instruction in Orthodontia in Dental Schools. By A. LeRoy Johnson, D.M.D., Boston, Mass. | 151 |
| Orthodontia Committee on Education—Report on Technic Teaching in the Undergraduate School. By Herbert A. Pullen, D.D.S., Buffalo, N. Y. | 159 |
| Partial Artificial Dentures in Cases of Missing Deciduous Teeth. By Carl O. Engstrom, D.D.S., Sacramento, Calif. | 162 |

Department of Dental and Oral Radiography

- | | |
|--|-----|
| Possibilities in an Organization of Oral Diagnosticians. By Clarence O. Simpson, M.D., D.D.S., St. Louis, Mo. | 165 |
|--|-----|

Radiodontic Riddles

- | | |
|--|-----|
| A "Full Mouth," but Room for Improvement | 170 |
| Fools, Differing Only in Degree | 172 |

Abstract of Current Literature

- | | |
|---|-----|
| Orthodontia, Oral Surgery, Surgical Orthodontia, and Dental Radiography | 174 |
|---|-----|

Editorials

- | | |
|---|-----|
| Some Thoughts on the Study of the Etiology of Angle's Class II Malocclusal Manifestations | 178 |
| The Need for More Careful Diagnosis of Malocclusion | 181 |

Orthodontic News and Notes

- | | |
|----------------------------------|-----|
| Orthodontic News and Notes | 183 |
|----------------------------------|-----|

Mention this Journal when writing to Advertisers.